ENVIRONMENTAL REGULATION

DIVISION OF AIR QUALITY

AIR QUALITY PERMITTING ELEMENT

Air Pollution Control

Operating Permits

Reclassification of CO_2 as an Air Contaminant

Adopted Amendments:	**N.J.A.C. 7:27-1.36, 8.1, 8.2, 8.12, Appendix 1, 16.1, 17.1, 19.1, 22.1, 22.2, 22.35, and Appendix**
Proposed:	October 18, 2004 at 36 N.J.R. 4607(a)
Adopted:	September 13, 2005 by Bradley M. Campbell, Commissioner, Department of Environmental Protection
Filed:	October 18, 2005, with substantive and technical changes not requiring additional public notice and comment (see N.J.A.C. 1:30-4.3)
Authority:	N.J.S.A. 26:2C, particularly 26:2C-8 and 26:2C-9.8; 13:1B-3; and 13:1D-9
DEP Docket Number:	21-04-09/476
Effective Date:	November 21, 2005
Operative Date:	November 21, 2005
Expiration Date:	Exempt

The New Jersey Department of Environmental Protection (Department) is

adopting herein amendments to N.J.A.C. 7:27-8, Permits and Certificates for Minor Facilities; N.J.A.C. 7:27-16.1, Control and Prohibition of Air Pollution by Volatile Organic Compounds; N.J.A.C. 7:27-17, Control and Prohibition of Air Pollution by Toxic Substances; N.J.A.C. 7:27-19, Control and Prohibition of Air Pollution from Oxides of Nitrogen; and N.J.A.C. 7:27-22, Operating Permits. These amendments revise and clarify the definition of "distillates of air" at N.J.A.C. 7:27-8.1, 7:27-16.1, 7:27-17.1 and 7:27-19.1, and define the term at 7:27-22.1, consistent with the definition of the term at N.J.A.C. 7:27-21, Emission Statements, thereby classifying carbon dioxide (CO_2) as an air contaminant.

The Department held a public hearing on November 22, 2004, at its headquarters at 401 East State Street, Trenton, New Jersey. The comment period was originally scheduled to close on December 18, 2004. In response to requests from a number of individuals, the comment period was extended by 30 days to January 18, 2005. See 36 N.J.R. 16(b) (January 3, 2005).

Summary of Hearing Officer's Recommendations and Agency Response:

William O'Sullivan, Director of the Division of Air Quality, served as the Hearing Officer at the public hearing and recommended that the amendments be adopted with the changes described below in the Summary of Public Comments and Agency Responses. The Department accepts this recommendation.

The hearing record is available for inspection in accordance with applicable law by contacting:

New Jersey Department of Environmental Protection

Office of Legal Affairs

Attn.: DEP Docket No. 33-02-12/192

PO Box 402

Trenton, New Jersey 08625-0402

Summary of Public Comments and Agency Responses:

The Department received oral and/or written comments on its proposed amendments from the following persons:

1. Danielle Alexander, MBI Gluckshaw (on behalf of American Forest & Paper Association)
2. Robert Androsiglio, Township of Wayne
3. James E. Benton, New Jersey Petroleum Council
4. Kyle Boudreaux, Florida Power and Light Company
5. Tracy Carluccio, Delaware River Keeper Network
6. J. Russel Cerchiaro, Schering-Plough
7. Scott M. Conklin, Ocean County Utilities Authority
8. Daniel Cunningham, PSE&G
9. Gregory J. Dana, Alliance of Automobile Manufacturers
10. Norbert Dee, National Petrochemical & Refiners Association
11. Eric DeGesero, Fuel Merchants of New Jersey

12. Tim Dillingham, American Littoral Society

13. Michael Egenton, New Jersey State Chamber of Commerce

14. William L. Fang, Edison Electric Institute

15. Victor J. Giudice, Siegfried (USA), Inc.

16. Ellen Gulbinsky, Association of Environmental Authorities

17. William M. Hanna III, Environmental Resources Management

18. Fletcher Harper, GreenFaith

19. Sean D. Horne, Valero Paulsboro Refinery

20. Patrick Hossay, Richard Stockton College of New Jersey

21. Dan J. Horton, Exxon-Mobil

22. Jack S. Kace, Hoffman-La Rouche Inc.

23. Ted Korth, New Jersey Audubon Society

24. Jay H. Lehr, The Heartland Institute

25. Marlo Lewis, Competitive Enterprise Institute

26. Sheldon Lipke, Passaic Valley Sewerage Commissioners

27. Luis Martinez, Natural Resources Defense Council

28. Brian R. Maurer, Union Carbide Corporation

29. Matthew Maxwell

30. Holly Minogue, Independent Energy Producers of New Jersey

31. Jonathan Moore

32. Michael J. Pisauro, Frascella, Salak & Pisauro, LLC (on behalf of the New Jersey Environmental Lobby)

33. Matt Polsky

34. Norman L. Renfro, Valero Energy Corporation

35. Emily Rusch, New Jersey Public Interest Research Group

36. Anthony Russo, Chemistry Council of New Jersey

37. Jim Schultz, American Iron and Steel Institute

38. Jim Sinclair and Sara Bluhm, New Jersey Business and Industry Association

39. Jeff Tittel, New Jersey Sierra Club

40. Eugene M. Trisko (on behalf of Center for Energy & Economic Development, Inc.)

41. Stuart Widom, Conectiv

42. Artis R. Williams, Air Products and Chemicals, Inc.

The number(s) in parentheses after each comment corresponds to the commenter numbers above and indicate(s) the person(s) who submitted the comment.

General Comments

1. **COMMENT:** We support the proposal and also urge the Department to consider the regulation of CO_2 emissions. (5, 12, 20, 35, 39)

2. **COMMENT:** The Department should clearly define the next steps for considering regulation of CO_2 emissions. (12)

3. **COMMENT:** The Department should consider regulation addressing CO_2 emissions in a multi-pollutant context along with emissions of SO_2 and NO_x. (39)

4. **COMMENT:** We support the Regional Greenhouse Gas Initiative and New Jersey adoption of California's CO_2 standards for automobiles and trucks as first steps in regulating CO_2 emissions. The Department should take swift action in regulating CO_2 emissions. (35)

RESPONSE TO COMMENTS 1 THROUGH 4: The Department acknowledges the commenters' support for the proposal and acknowledges the commenters' input, in particular as it applies to the scope of the proposal, which does not regulate CO_2 emissions. Future rulemaking would be required to regulate CO_2. The Department continues to be an active participant in the Regional Greenhouse Gas Initiative.

5. **COMMENT:** While climate change is a global problem, New Jersey has a role to play in addressing the climate change issue. (5,18, 23,35, 39)

RESPONSE: The Department agrees, which is why it has taken the step of making a formal determination that regulating CO_2 is in the best interest of human health, welfare and the environment.

6. **COMMENT:** The Department's proposal addresses an issue of tremendous religious and ethical significance. Reducing CO_2 emissions to address climate change enjoys widespread support in the national and international religious community. Climate change has already been shown to have a number of effects that are deeply harmful to the environment and to human health and well being. (18)

RESPONSE: The Department acknowledges the commenter's support for the proposal.

7. **COMMENT:** The proposal should be withdrawn. (1, 3, 6, 8, 10, 14, 16, 21, 22, 30, 34, 36, 37, 38, 42)

RESPONSE: The Department believes that the adopted rules are necessary and appropriate, as discussed in the responses to comments, below.

8. **COMMENT:** The Department should recognize the voluntary efforts that New Jersey industry is making to address climate change issues. Climate change can be successfully addressed through voluntary measures. (1)

RESPONSE: The Department has been active in encouraging voluntary greenhouse gas emissions reduction initiatives in multiple sectors of the New Jersey economy, and acknowledges that the regulated community has participated

in those initiatives. However, the Department believes that mandatory actions to control CO_2 emissions will ultimately be necessary to achieve CO_2 emission reductions that place the State on a long-term trajectory toward emissions levels (considering the State's current contribution to global CO_2 emissions) necessary to achieve global atmospheric CO_2 concentrations that would be required for climate stabilization. Although voluntary programs have led to incremental emissions reductions, absolute CO_2 emissions in the State continue to rise.

9. **COMMENT:** The proposal should be temporarily withdrawn in order to allow for a dialogue between the Department and the regulated community to explore how New Jersey can best address the issue of climate change and implement the most effective and efficient solutions. A temporary withdrawal of the proposal at this time would not delay any potential agenda to implement future regulatory initiatives. (22)

RESPONSE: The Department will consider any future regulation of CO_2 emissions in a measured manner that affords full opportunity for public input. The most significant current discussion of possible regulation of CO_2 emissions is through the Regional Greenhouse Gas Initiative (RGGI). The Department is participating in the development of the RGGI model rule, which has proceeded through a transparent process, allowing for comment by regional stakeholders on the emerging design of the program. Once the model rule is finalized, the Department will determine whether the rule is appropriate for New Jersey.

Evaluation of a RGGI model rule by the Department would also incorporate full opportunity for public input prior to initiating rulemaking, should the Department decide to move forward with the proposal of rules to implement RGGI.

10. COMMENT: Without a more comprehensive and transparent greenhouse gas strategy, the Department's proposal is premature and may not send the market signal intended. Since the Department has not presented a comprehensive strategy for addressing greenhouse gas emissions in the State, the proposal creates uncertainty that could impact the investment climate in New Jersey for energy-intensive industries. This may cause potentially regulated entities to delay or cancel planned investment and expansion in the State. (42)

RESPONSE: The proposal acknowledges that anthropogenic emissions of CO_2 are creating adverse impacts on the environment and human health and welfare. (See 36 N.J.R. at 4608-4609.) As a result, the Department proposed that CO_2, when emitted by sources regulated by the Department, should be considered an air contaminant. (See 36 N.J.R. at 4607-4608.) The Department also determined that regulation of CO_2 as an air contaminant is in the best interest of human health, welfare, and the environment. (See 36 N.J.R. at 4608.) This determination, as well as the Department's decision to classify CO_2 as an air contaminant, is separate and distinct from any comprehensive strategy devised to control CO_2 emissions. Rather than creating uncertainty, the Department's action

acknowledges that CO_2 should be considered an air contaminant and that future regulation of CO_2 emissions will be considered as warranted.

The Department disagrees that the adopted rules create regulatory uncertainty. The Department's classification of CO_2 as an air contaminant makes it clear that CO_2 emissions are of concern and that future regulatory initiatives may be considered in the State. This classification reduces regulatory uncertainty, rather than increases it.

11. COMMENT: The Department appears to be placing the burden of CO_2 regulation on stationary sources when mobile sources are one of the largest and fastest growing sources of greenhouse gas emissions. It appears that the Department intends to regulate only stationary sources. Lacking a justified and prioritized focus, the Department's proposed action is, therefore, arbitrary and capricious. (42)

RESPONSE: The adopted rules do not regulate CO_2 emissions, and do not single out any category of sources from among those that the Department has the authority to regulate. The Department has stated that the adopted rules are an initial step that sets the stage for considering a model rule produced through the Regional Greenhouse Gas Initiative. (See 36 N.J.R. at 4607.) However, this does not preclude the Department from consideration of other regulatory initiatives addressing CO_2 emissions. The Department's formal determination and justification in the proposal regarding the merit of regulating CO_2 as an air

contaminant did not specify the sources for which regulation should be considered. The Department will evaluate the need for future regulation of CO_2 emissions from both stationary and mobile sources.

Authority for the Department's Action

12. **COMMENT:** The Department does not have authority to regulate CO_2 under the Air Pollution Control Act (APCA), N.J.S.A. 26:2C-1 et seq. The APCA does not provide any clear direction on the regulation of CO_2 as an air contaminant and it does not address the issue of climate change. The Department does not provide any legislative record or other evidence to the contrary. (9)

13. **COMMENT:** The Department does not have authority to regulate CO_2 under the Air Pollution Control Act (APCA), N.J.S.A. 26:2C-1 et seq. The legislative intent behind the APCA is clear in not contemplating CO_2 as an air contaminant. Amendments to the APCA in 1995 incorporated the Department's regulatory definition of "air contaminant" at the time, which excluded "distillates of air," and were silent on the definition of CO_2 as an "air contaminant." At the time, the Department included CO_2 in its definition of distillates of air. The Legislature did not envision Department regulation of global-scale impacts of CO_2 emissions or climate change. If the Legislature had intended regulation of CO_2, it would have included specific language in the APCA authorizing such regulation. There is no mention in the APCA of CO_2, in contrast to specific mention in the APCA of

other air contaminants that the Legislature intended the Department to regulate, such as NO_x and VOCs. (3, 13, 36, 38)

RESPONSE TO COMMENTS 12 AND 13: The Department has the authority to define CO_2 as an air contaminant under the APCA, pursuant to N.J.S.A. 26:2C-2. Since the definition of air contaminant is dependent on the definition of the term "distillates of air," which is not defined in the APCA, the Department must define "distillates of air" in order to define the term "air contaminant." The APCA is also clear that the Department has the authority to regulate air contaminants at its discretion, provided that the Department provides a formal justification for doing so, pursuant to N.J.S.A. 26:2C-9.2(i).

The Department disagrees that the absence of specific legislative reference to CO_2 emissions or climate change in the 1995 amendments to the APCA is indicative of the Department's lack of authority to regulate CO_2 as an air contaminant.

14. **COMMENT:** The APCA gives the Department the authority only to address in-state air pollution impacts, pursuant to N.J.S.A. 26:2C-2, which states in part that air pollution includes the presence in the outdoor air of air contaminants in such quantities and duration as "would unreasonably interfere with the enjoyment of life or property *throughout the State* and *in those areas of the State as shall be affected*" [italics added by commenter]. As a result, the APCA requires a "nexus" between the air contaminants to be regulated and the pollution impacts within the State. CO_2 emissions are global in nature and climate change impacts cannot be

sufficiently linked to CO_2 emissions by sources within the state. CO_2 emissions within the State are not linked to climate change impacts within the State, and therefore the Department does not have the authority to regulate in-state emissions of CO_2 pursuant to the APCA. (3, 8, 13, 36, 38)

RESPONSE: The APCA, at N.J.S.A. 26:2C-2, defines air pollution based on concentrations of air contaminants that create adverse impacts in the State. Current air pollution impacts in the State are, in part, the result of interstate transport of pollutants, yet this interstate transport has no bearing on the definition of "air contaminant" or "air pollutant" under the APCA. By extension, the role of global CO_2 concentrations in driving climate change has no bearing on the consideration of CO_2 emissions as "air pollution" under the APCA.

Moreover, the Department disagrees that there is no connection between in-State emissions of CO_2 and climate change impacts in the State. In-State emissions of CO_2 add to global atmospheric concentrations of greenhouse gases that are resulting in anthropogenic climate change. Thus, it is clear that in-State emissions of CO_2 are contributing to global climate change. The fact that in-State emissions alone are not fully responsible for global climate change does not invalidate this link between in-State emissions and in-State impacts.

15. COMMENT: Classification of CO_2 as an air contaminant, in combination with the Department's formal determination regarding the merit of regulating CO_2 as an air contaminant, would require the Department to "enforce against all emitters"

of CO_2. The proposal and formal determination refers to the definition of "air pollution" at N.J.S.A. 26:2C-2 and N.J.A.C. 7:27-5.1 in stating that a threshold of adverse impact due to CO_2 emissions is clear. Given the Department's assertion that this threshold of adverse impact has been reached, then the Department must enforce against all emitters of CO_2 if the proposal is adopted. (14)

RESPONSE: The adopted rules do not regulate CO_2 emissions, and do not single out any category of sources from among those that the Department has the authority to regulate. Accordingly, the adopted amendments require no enforcement against any source.

16. COMMENT: N.J.S.A. 26:2C-9.8(c) precludes the Department from implementing a cap-and-trade program targeting CO_2 emissions. (3, 13, 14, 18, 36, 38)

RESPONSE: The Department disagrees that N.J.S.A. 26:2C-9.8(c) would preclude the Department from establishing a cap-and-trade program addressing CO_2 emissions. N.J.S.A. 26:2C-9.8 required the Department to propose rules and regulations to establish emissions trading and banking systems that make progress toward attainment and maintenance of National Ambient Air Quality Standards (NAAQS) within 90 days of passage of the 1995 amendments to the APCA, and stated that such rules must not conflict with applicable Federal law and must contribute to the goal of improving air quality in New Jersey. N.J.S.A. 26:2C-

9.8(d) states that the proposals specifically required by 26:2C-9.8(a) shall contribute to improving air quality in New Jersey. Nothing in N.J.S.A. 26:2C-9.8 limits the Department's authority to implement cap-and-trade regimes that do not conflict with applicable Federal law and that contribute to the goal of improving air quality in the State.

17. COMMENT: The agency record does not support the proposal. The proposal should be withdrawn pending a comprehensive review of the regulatory and economic impacts of the proposal, including input from all affected parties. If the proposal is a prelude to a regional program to regulate CO_2 emissions, the Department should defer adopting regulations until such a regional program is developed. (3, 13, 15, 21, 36, 38)

RESPONSE: The adopted amendments do not regulate CO_2 emissions or create new reporting requirements for sources (see response to comments 61, 62, and 63). Therefore, a review of the regulatory and economic impacts of specific regulatory regimes addressing CO_2 emissions is not possible or warranted. The Department disagrees that adoption of the proposal should be postponed until the Regional Greenhouse Gas Initiative or other program is developed. The adopted amendments are necessary in the event that the Department determines that future rulemaking, such as adopting the RGGI model rules, is appropriate; however, the adopted rules do not apply exclusively to the adoption of a future RGGI rule. The Department discussed RGGI in the Summary of the proposal to inform the public

of the Department's broader aims related to ongoing climate change policy development.

18. **COMMENT:** The proposal is premature and should be withdrawn. The Department's analysis of the impacts of the proposed amendments was seriously deficient, and the Department did not elaborate a comprehensive and transparent strategy for addressing greenhouse gas emissions. (42)

RESPONSE: The Department has clarified the rules on adoption (see responses to comments 61, 62, and 63 for a description of specific changes made on adoption), consistent with the Department's explicitly stated intent in the impact statements in the proposal (see 36 N.J.R. 4610) that it is not establishing any new regulatory or reporting requirements. As the adopted amendments do not regulate CO_2 emissions, an analysis of the potential impacts of a comprehensive strategy to address CO_2 emissions is not necessary.

19. **COMMENT:** Based on the proposal and the Department's formal determination regarding the merit of regulating CO_2 as an air contaminant, the Department is intending to regulate CO_2 emissions from specific stationary sources in New Jersey. Most of the State's CO_2 emissions originate from non-stationary sources. It is arbitrary to regulate CO_2 emissions from only specific stationary sources. (3, 13, 15, 21, 30, 36, 38)

RESPONSE: As explained in response to comment 18, the adopted amendments do not regulate CO_2 emissions. The Department stated in the proposal Summary that the reclassification of CO_2 as an air contaminant is an initial step that would set the stage for consideration of a model rule produced through the Regional Greenhouse Gas Initiative, or other rulemaking. However, this does not preclude the Department from considering other regulatory initiatives to address CO_2 emissions. The Department's formal determination and justification in the proposal regarding the merit of regulating CO_2 as an air contaminant did not specify the sources for which regulation might be considered. The Department will evaluate the need for future regulation of CO_2 emissions from both stationary and mobile sources.

20. **COMMENT:** The proposal violates the Administrative Procedures Act (APA), N.J.S.A. 52:14B-1 et seq. (3, 8, 13, 14, 36, 38)

21. **COMMENT:** The Department did not consider potential regulatory ramifications of proposal. The Department's evaluation of the regulatory impacts of the proposal were legally and factually inaccurate. (3, 13, 14, 36, 38)

22. **COMMENT:** The Department's assertion that the proposal is a prelude to regulation was misleading, since the proposed amendments would create multiple regulatory requirements for sources of CO_2 emissions. The proposed amendments are arbitrary and capricious. (3, 8, 13, 14, 36, 38)

23. **COMMENT:** The proposal is an inappropriate use of the Department's authority pursuant to the APA, since the Department's intent was to send a "market signal" to sources of CO_2 emissions. The Department stated in the proposal that one intent was to set the stage for consideration of a model rule produced through the RGGI. (14)

RESPONSE TO COMMENTS 20 THROUGH 23: It was not the Department's intent to establish CO_2 emissions permitting and regulatory requirements through the proposed amendments. The Department has modified the rules on adoption to except CO_2 from existing air pollution regulatory and reporting requirements. See the response to comment 61for a description of the specific changes made on adoption.

The amendments enable the Department to undertake future regulation of CO_2 emissions as warranted. As the Department noted in the Social Impact analysis, the reclassification of CO_2 as an air contaminant subject to future regulation could encourage sources of CO_2 emissions to consider voluntary reductions of CO_2 emissions in the context of other business decisions. See 36 N.J.R. 4610.

The Department's original assessment of the impacts of the proposal remains appropriate, and the Department has complied with the APA in adopting the within amendments.

24. **COMMENT:** The Department's determination regarding the merit of regulating CO_2 as an air contaminant is inappropriate, since the proposal consisted of a "prelude to regulation" through RGGI, rather than imposing new regulations. The APCA, N.J.S.A. 26:2C-1 et seq., is clear that the Department must determine that the regulation of CO_2 in New Jersey at this time is in the best interest of human health, welfare, and the environment. The Department could not make the determination because it is premature. The Department's determination is *ultra vires* and violates the APCA and the APA, N.J.S.A. 52:14B-1 et seq. (8)

RESPONSE: The Department's determination met the statutory requirement of N.J.S.A. 26:2C-9.2(i), which requires the Department to publish a determination and justification pursuant to the APA, prior to regulation of any air contaminant that the United States Environmental Protection Agency (EPA) does not regulate. The Department's determination and justification in and of themselves do not constitute regulation, but they are a required step prior to any future rulemaking addressing an air contaminant not regulated by the EPA.

25. **COMMENT:** Regulation of CO_2 by the Department would be Federally preempted because it conflicts with Federal law, the rights of Congress and the President to determine national climate change policy, and the rights granted Congress and the President by the United States Constitution to conduct foreign policy related to global climate change. (3, 4, 10, 13, 14, 36, 37, 38, 40, 41)

RESPONSE: The reclassification of CO_2 as an air contaminant for purposes of future regulation does not conflict with Federal statutory law or the U.S. Constitution. In-State emissions of CO_2 add to global atmospheric concentrations of greenhouse gases that are resulting in anthropogenic climate change. Thus, it is clear that in-State emissions of CO_2 are contributing to global climate change. The fact that in-State emissions alone are not fully responsible for global climate change does not invalidate this link between in-State emissions and in-State impacts.

26. COMMENT: Classifying CO_2 as an air contaminant is in direct opposition to the regulatory authority granted by the EPA to states under the Clean Air Act. The Department's Air Pollution Control rules exist to implement the Federal statutory authority under the CAA. Since CO_2 is not a designated pollutant under the CAA, its regulation by EPA, and ultimately under the authority of State statutes, was not intended by Congress. Therefore, the EPA and the Department do not have authority under the CAA to regulate CO_2. Although N.J.A.C. 7:27-5.1 provides for the regulatory definition of air pollution as air contaminants that “are, or tend to be, injurious to human health or welfare, animal life or property," it must be read in the context of the regulatory authority granted to the State by the EPA, which would allow for the reduction of these risks through the use of State Implementation Plans (SIPs). SIPs are not a suitable mechanism for addressing a global environmental problem. Pursuant to the CAA, once a substance is

designated as a pollutant, EPA is required to establish ambient air quality standards designed to protect human health and the environment. No ambient air quality standard has been established for CO_2, nor has the scientific community agreed upon a level of CO_2 emissions at which there is no adverse environmental impact from these emissions. (4)

27. **COMMENT:** EPA has found that no authority exists under the CAA to limit or regulate CO_2 emissions for global climate change purposes (68 Fed. Reg. at 52925). Regulation of CO_2 by the Department would, therefore, conflict with the intent of Congress. (41)

RESPONSE TO COMMENTS 26 AND 27: The Federal Clean Air Act states that, "Air pollution control at its source is the primary responsibility of the State…." (CAA Section 101, 42 U.S.C. 7401). There are numerous instances where states have implemented air pollution control requirements that EPA has not implemented or requirements that are more stringent than Federal requirements. This is allowable and appropriate. State-level air pollution control requirements can be and are also enacted outside of the context of SIPs and achievement of NAAQS. The Department's authority to regulate CO_2 emissions is derived from the APCA, N.J.S.A. 26:2C-1 et seq. Other states, including Massachusetts and New Hampshire, currently have statutory and/or regulatory requirements addressing CO_2 emissions.

28. **COMMENT:** The costs borne by industry of complying with future regulation of CO_2 emissions by the Department would impose an undue burden on interstate commerce. (3, 13, 36, 38)

RESPONSE: The analysis of potential economic and other impacts of regulating CO_2 emissions will be conducted in the context of the necessary rulemaking. At this time, it is not appropriate or useful for the Department to speculate regarding such impacts.

Basis for the Department's Formal Determination

29. **COMMENT:** The science of climate change and climate change impacts is well established. (5, 12, 18, 23, 27, 35, 39)

30. **COMMENT:** The Department is overdue in recognizing the effects of anthropogenic CO_2 emissions. (35)

31. **COMMENT:** Although there is remaining uncertainty regarding the location, timing, and magnitude of climate change impacts, the global scientific community has left no doubt regarding the attribution of climate change impacts to emissions of CO_2 and other greenhouse gases. (27)

32. **COMMENT:** The impacts of climate change are already apparent in New Jersey. (5, 12, 23, 35, 39)

33. **COMMENT:** The Mid-Atlantic states have already experienced a shifting of habitat distribution for wildlife and sea life, such as surf clams, in response to changes in sea temperatures. (12)

34. **COMMENT:** Avian migratory patterns are already showing the effects of climate change. Seven species of warbler have shifted northward an average of more than 65 miles during the past 24 years. Changes in migration chronology could have a devastating impact on birds in the region that would have a severe impact on bird populations. A number of species might be lost as breeders in New Jersey as a consequence of global warming. Climate change threatens to create shifts in vegetative communities that can significantly disrupt migratory bird patterns. (23)

35. **COMMENT:** The Delaware River Basin Commission in their most recently assigned basin plan identified global warming and resultant sea level rise as an important issue that must be planned for. (5)

36. **COMMENT:** There are a number of projected impacts due to climate change in New Jersey, such as heat waves and the likelihood of an increase in extreme weather events, as well as an increase in disease vectors. An increase in sea level

of 2.3 feet would submerge up to 433 square miles of New Jersey. The Delaware Bay shore is the second largest stopping ground for migratory birds in the Western Hemisphere, and birding is one of the top forms of recreation in New Jersey. (35)

37. **COMMENT:** A shift in habitat might force as many as 31 species of birds to change their migratory patterns to exclude New Jersey. Sea-level rise and an increase in subsurface sea temperatures would have significant impacts on coastal wetlands, fisheries, and habitats for birds and other wildlife. Increased beach nourishment requirements resulting from continued sea level rise could have adverse impacts on offshore habitats due to increased offshore harvesting of sand. (12)

38. **COMMENT:** Climate change and sea-level rise would have serious economic impacts on New Jersey. (12, 35)

39. **COMMENT:** There were more than $170 million in economic losses in New Jersey in 2002 as a result of extreme weather. These costs can be expected to rise in the future as a result of climate change. (35)

RESPONSE TO COMMENTS 29 THROUGH 39: The Department acknowledges the commenters' support for its formal determination that

regulating CO_2 is in the best interest of human health, welfare and the environment

40. **COMMENT:** Reliance on reports from the Intergovernmental Panel on Climate Change (IPCC) presents an incomplete and oversimplified interpretation of the current understanding of the science of climate change. Anthropogenic CO_2 emissions are only one component of the global carbon cycle. (3, 13, 15, 21, 36, 38)

RESPONSE: The IPCC was created in 1988 by the World Meteorological Organization and the United Nations Environmental Program. The IPCC reports, which have involved more than 3,000 scientists in their production, are widely regarded as representing the current state of knowledge related to climate change science and impacts. The IPCC's purpose is to evaluate climate change science based on peer-reviewed and published scientific literature. IPCC reports present a comprehensive review of issues relating to climate change, and the IPCC has stated that there is a scientific consensus that climate is being affected by human activity.

The rule proposal also cites, in addition to the IPCC *Third Assessment Report*, a report of the U.S. National Research Council (NRC, *Climate Change Science: An Analysis of Some Key Questions,* National Academy of Sciences, 2001). This report was requested by the President of the United States in 2001 to

assess the IPCC findings. The NRC largely confirmed the IPCC findings. (See 36 N.J.R. 4608-4609.)

Climate scientists now agree that anthropogenic CO_2 emissions have caused an imbalance in the natural carbon cycle sufficient to cause an increase in global atmospheric CO_2 concentrations from a pre-industrial level of 280 ppm to 368 ppm in 2000. Although up to half of CO_2 emissions are reabsorbed by the oceans and by plants, there is an accumulation that is causing an annual rise in the atmospheric concentration of CO_2. Due to anthropogenic CO_2 emissions, the atmospheric concentration of carbon dioxide in the air has increased by 31 percent since 1850, and CO_2 emissions are on a continued upward trend (IPCC, *Third Assessment Report*, 2001). In the United States, total annual CO_2 emissions increased by 17 percent from 1990 to 2003 (U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2003*, 2005).

41. **COMMENT:** There is still significant uncertainty in the validity of current climate change modeling projections. Computer climate models form much of the basis of the IPCC reports cited by the Department, and these modeling uncertainties need to be considered when taking a regulatory action. (3, 13, 15, 16, 21, 36, 38)

RESPONSE: The IPCC assessment is based not only on computer modeling, but a combination of observations (e.g., direct measurements of the atmospheric

concentrations of CO_2, reconstruction of the earlier history of atmospheric CO_2 content), theoretical analyses, and computer modeling. While natural fluctuations in climatic variables would tend to mask human-caused disruption in its early stages, a variety of evidence indicates that the "signal" of anthropogenic change is visible despite the "noise" of these fluctuations. These observed changes in climatic variables are consistent, in overall magnitudes and in the general pattern of their geographic distribution, with the predictions of basic theory for the effects of the changes in greenhouse gas and particulate matter concentrations known to have occurred over the given period.

The observed climatic changes are also similar to the predictions of the most sophisticated computer models of global climate, when these models include the observed build-up of greenhouse gases (corrected for the effect of atmospheric particulate matter). This agreement among theory, observation, and computer modeling extends, moreover, to a variety of subtler trends for which reliable measurements have become available for the past 15 to 25 years (e.g., cooling in the lower stratosphere, reduction of day-night temperature differences, and maximum surface warming in northern high latitudes in winter). Taken together, these phenomena are "fingerprints" of anthropogenic climate change. These phenomena are consistent with the hypothesis that increases in anthropogenic greenhouse gas emissions explain the observed changes, and inconsistent with alternative hypotheses.

There is now an international scientific consensus that Earth's climate is warming, that CO_2 and other anthropogenic greenhouse gas emissions are the

main reason for this, and that the consequences of this warming are likely to be serious and predominantly negative.

There is remaining uncertainty about the level of future greenhouse gas emissions (impacted by economic growth, demographic changes, and political decisions) and the degree, timing, and location of specific projected impacts. There is uncertainty as to how much global temperature will increase, with more recent projections showing that the increase could be even higher than earlier expected, which would make the impacts of climate change more severe. However, given the scientific consensus that anthropogenic climate change is happening, the potential for severe impacts, and the finding that future atmospheric CO_2 concentrations will drive the level of climate change impacts, remaining uncertainty is grounds for action rather than inaction. Uncertainty entails risk, and given the existence of a clear dynamic that is increasing risk, prudence dictates that risk be managed to the extent practicable.

42. **COMMENT:** Consideration of the regulation of CO_2 emissions was ill advised, since there is no scientific consensus that CO_2 emissions have adverse or positive impacts on the environment. Regulation of CO_2 would amount to "regulation without science." (2)

43. **COMMENT:** There is no credible scientific evidence that CO_2 emissions are causing, or are likely to cause, "dangerous interference" with the global climate system. CO_2 emissions are providing positive environmental benefits by

enhancing bio-diversity and global food availability and security. The Department overlooked the beneficial impacts of CO_2 emissions when making its formal determination that regulating CO_2 is in the best interest of human health, welfare, and the environment. A warmer climate will have a positive human health impact, since more mortalities result from cold weather events than heat stress. (25)

RESPONSE TO COMMENTS 42 AND 43: A scientific consensus has established that anthropogenic CO_2 emissions are the primary contributor to an enhanced greenhouse effect (global warming) and that these emissions are affecting the climate (IPCC, *Third Assessment Report*, 2001). Accordingly, many countries have moved to regulate CO_2 emissions. Most prominent are countries within the European Union (and the EU as a whole).

The relative importance of CO_2 as the primary greenhouse gas will grow in coming decades with the decline of methane emissions as a secondary source and the phase out of chloroflourocarbons (CFCs) as result of the successful implementation of the Montreal Protocol for the phase out of ozone-depleting substances.

In the proposal Summary, the Department noted a number of current and projected adverse impacts resulting from climate change, as reported in multiple multi-disciplinary climate change impact analyses. Negative impacts include a substantial rise in sea level (which is a serious concern for New Jersey); increases in the variability of precipitation, resulting in increased flooding in some years

and more severe drought in other years; die-off of species and ecosystems that cannot adjust rapidly enough to climate change; a spread in vector-borne infectious diseases; reduced agricultural productivity for certain crops; and an increase in human mortality due to heat waves, among others. See 36 N.J.R. 4608-4609. The only positive impacts that have been identified are an increase in the length of the growing season in certain geographic areas and a decrease in human mortality due to extreme cold weather. Apart from the potential decrease in cold weather-related deaths, the Department is aware of no scientific evidence that global climate change will have a positive human health impact.

Substantial scientific evidence indicates that the probable result of anthropogenic global climate change, coupled with other human activities, will be the extinction of a substantial number of vulnerable species, which will result in a reduction in bio-diversity. Ecologists fear that the impact of global warming on bio-diversity could be severe. The recently released *Millennium Ecosystem Assessment* report, conducted by 1,300 experts from 95 countries, indicates that the speed of climate change (greater than anything seen for at least 10,000 years) is likely to outpace nature's ability to adapt (*Millennium Ecosystem Assessment*, United Nations, 2005). There is the potential that major ecosystems could reach a threshold beyond which they cannot recover, creating positive feedback loops that increase adverse impacts dramatically.

Recent research by The Royal Society also indicates that anthropogenic CO_2 emissions are making the oceans more acidic, and that reducing CO_2 emissions to the atmosphere "appears to be the only practical way to minimize the

risk of large-scale and long-term change to the oceans." (The Royal Society, *Ocean Acidification due to Increasing Atmospheric Carbon Dioxide*, June 2005, p. vi.) The research also indicates that there may be important interactions and feedbacks between changes to the chemistry of the oceans and changes in atmospheric chemistry and global climate, since acidification of the oceans will reduce their capacity to absorb CO_2. This would increase the magnitude of climate change and the rate at which it occurs.

The implications for food production and global food availability are also serious. Established crops, finely tuned over time to their environments, could be destabilized. Climate studies indicate the likelihood of more droughts in Europe, North America, and western and central Australia. This is one indication of another effect of climate change – the alterations to the hydrological cycle (the circulation of water among sea, atmosphere, and the Earth's surface) and related changes in patterns of rainfall, floods and drought. Water availability may diminish where it is expected and needed, resulting in increased drought, and increase where it is unexpected or problematic, resulting in increased flooding.

Studies presented at a recent meeting of The Royal Society in London indicated that the impact of climate change on global food production is likely to be worse than previously predicted, with increasing temperatures, drought, and ground-level ozone concentrations resulting in a substantial reduction in crop yields that outweigh the benefits of "CO_2 fertilization" due to an increase in atmospheric CO_2 concentrations. These impacts may have significant impacts on food security, especially in developing countries, as recent studies indicate that

there may be thresholds where major food crops become very vulnerable to climate change (see "Food crops in a changing climate," Royal Society Discussion Meeting, London, April 26-27, 2005; see also, for example, Steve Long, "Response of crop photosynthesis and production to rising CO_2, ozone and temperature, " presented at April 26-27, 2005, Royal Society Discussion Meeting).

The expected result of climate change is an increase in heat-related deaths and a decrease in cold-related deaths. Heat extremes are expected to increase in number due to climate change. Studies addressing New Jersey, conducted as part of the National Climate Assessment, found that the net effect will be a significant increase in climate-related mortality, with the number of heat deaths outweighing the number of avoided cold deaths (*Mid-Atlantic Regional Assessment*, March 2000). Severe heat events hasten death among the elderly and others whose health has been compromised for medical reasons. In various geographic areas, climate change will also increase the viable ranges for disease-carrying vectors such as mosquitoes, which will adversely affect human health.

44. **COMMENT:** There is no consensus within the scientific community that the increase in global CO_2 emissions is negatively impacting the climate system, and by extension no consensus that adverse environmental impacts are occurring as a result of CO_2 emissions. A petition signed by 393 members of the New Jersey scientific community disagrees with the scientific conclusions of the IPCC. The Department should not base State environmental policy on a theory that does not

have the support of the New Jersey scientific community or the nation. The Department should consider alternate scientific theories for the increase in CO_2 emissions and climate change. There are positive environmental outcomes linked to increasing concentrations of CO_2 in the atmosphere. The Department should allow the scientific community to continue studying the issue of climate change and develop conclusive information before the Department makes any policy decisions regarding climate change. (16)

RESPONSE: As mentioned in the responses to comments 42 and 43, there is an international scientific consensus that anthropogenic CO_2 emissions are impacting the Earth's climate and that climate change will have serious, and potentially severe, adverse impacts.

The scientific bodies in the United States supporting these positions include the National Academy of Sciences (United States), the American Meteorological Society, the American Geophysical Union, the American Association for the Advancement of Science, and the IPCC (on which the United States has a substantial representation). In June 2005, the national science academies of the United States, the United Kingdom, France, Italy, Germany, Japan, Canada, Russia, China, India, and Brazil released an unprecedented joint statement asserting that "there is now strong evidence that significant global warming is occuring" and that "it is likely that most of the warming in recent decades can be attributed to human activities." ("Joint Science Academies' Statement: Global Response to Climate Change," June 7, 2005) The academies

stated, "The scientific understanding of climate change is now sufficiently clear to justify nations taking prompt action."

Although the fields of activity and professional affiliations of the petition signers referenced by the commenter were not disclosed, the Department notes that the majority do not appear to be climate scientists or practitioners in climate-related fields. In contrast, the consensus of the relevant scientific communities in both the United States and internationally is that greenhouse gas emissions (dominated by CO_2 emissions) are resulting in climate change.

Although the Department supports continued research on the impacts of climate change and means of mitigating impacts, emerging evidence regarding the possibility of abrupt adverse climate change, the irreversibility of many of the projected impacts of climate change, and the seriousness of the adverse impacts creates a high level of risk that requires action to address CO_2 emissions.

The climate science community has considered alternative theories that have been propounded to address unexplained changes in the atmosphere over a long period of time (including the era before the industrial revolution). These theories mainly relate to natural causes of past temperature fluctuations, whether they lasted for millennia or just a few years. For example, volcanic eruptions can cool the planet for months or even years by filling the upper atmosphere with a shading aerosol of particles. However, the recent volcanic eruptions have had short-term effects that do not affect long-term trends. Variations in the amount of radiation leaving the sun, shown for instance in sunspot cycles, influence temperatures on Earth on time scales from a few years upward. They may have

been responsible for the little ice age (between the 14th and 19th centuries) and the warming that followed it, beginning in the 19th century. Another theory points to subtle changes in the Earth's orbit, known as Milankovitch "wobbles" (after the mathematician Milutin Milankovitch who studied them), which change either the amount of heat reaching the planet surface or its distribution. These wobbles operate over thousands of years and so may slowly alter climate.

However, these natural causes cannot explain the recent temperature increase. If the Milankovitch theory were valid, orbital wobbles should be propelling the planet toward the next ice age. In fact, based on this theory, scientists in the mid-20th century issued warnings of a cooler era coming. The theory that solar cycles could explain variations in global warming gained credence during the last decade (1990s), when a scientist from the Danish Meteorological Institute reported in 1991 that sunspot cycles and increases in global temperatures appeared to have been coinciding over the previous century. However, in 2000 the same scientist (Knud Lassen) announced that his latest analysis indicated that solar cycles could not explain warming since 1960. This echoes the conclusion of the IPCC in its most recent reports that during the last quarter century solar cycles should have driven a reduction in global temperature, when in fact the opposite occurred (IPCC, *Third Assessment Report*, 2001).

45. **COMMENT:** The Department's assertion that increased temperatures due to climate change will impact the formation of ground-level ozone does not have the consensus of the scientific community. (16)

RESPONSE: A number of studies have identified an increase in ground-level ozone as a likely consequence of climate change (see for example, Kinney et al., *Climate Change and Public Health: Impact Assessment for the NYC Metropolitan Region*, 2000, p. 21). This conclusion can also be drawn from straightforward scientific reasoning based on existing knowledge. A recent study addressing this issue found that the formation of ground-level ozone would increase as a result of climate change (Knowlton et al., "Assessing Ozone-Related Health Impacts under a Changing Climate," *Environmental Health Perspectives* 112 (November): 1557-1563).

How climate change impacts formation of ground-level ozone (the chief component of urban smog) can be understood based on how ground-level ozone is formed. Most ground-level ozone, as a secondary pollutant, forms when sunlight and heat stimulate a chemical reaction between nitrogen oxides and hydrocarbons. Hotter temperatures in urban environments enhance the formation of this secondary pollutant. When temperatures are high, and in instances where the mixing of air currents is limited, ozone can accumulate to unhealthful levels.

Revised Definition of "Distillates of Air"

46. COMMENT: The Department did not provide support in the administrative record to justify its change to the definition of "distillates of air." The Department did not provide any support, such as regulatory or legislative

statements, for its assertion in the proposal that "the omission of certain naturally occurring chemical species demonstrates an attempt to use distillates of air as a proxy for components of air that were not considered to be potentially problematic, dangerous, or cause adverse environmental impacts, given the state of knowledge at the time." (See 36 N.J.R. at 4610.) The Department did not apply the plain meaning to the term distillates of air. The Department failed to include any legislative history indicating that a chemical engineering process was the basis for the statutory definition of the term "distillates of air." When dealing with issues of statutory construction, language should be given its ordinary meaning, absent a legislative intent to the contrary, in accordance with *Cherry Hill Manor Associates v. Faugno*, 182 N.J. 64 (2004) (quoting *Burns v. Belafsky*, 166 N.J. 466 (2001)). The "plain meaning" of distillates of air is "components or elements of air." (3, 9, 13, 15, 21, 36, 38)

RESPONSE: The Department referenced in the proposal Summary (see 36 N.J.R. 4607) the Emissions Statements rulemaking, in which the Department determined that "a reasonable interpretation of the Legislature's intent in referencing 'distillates of air' in the definition of 'air contaminant' was to exclude those elements of air not normally regarded as contaminants and not generally addressed by air pollution control measures." (See 35 N.J.R at 1062 and 34 N.J.R. at 704.) The Department's statement that "the omission of certain naturally occurring chemical species demonstrates an attempt to use distillates of air as a proxy for components of air that were not considered to be potentially

problematic, dangerous, or cause adverse environmental impacts, given the state of knowledge at the time" (see 36 N.J.R. at 4610) is consistent with the administrative record for the Emissions Statement rulemaking (see 34 N.J.R. 695(a) and 35 N.J.R. 1059(a)) and the fact that the existing definition of "distillates of air" was not entirely consistent with the components of "standard atmosphere" or "dry air," indicating the intent to use this term as a regulatory proxy rather than a direct reference to components of "standard atmosphere" or "dry air."

"Distillates of air" is not defined by statute. As a result, the commenter's arguments related to issues of statutory construction are misplaced in this instance. The Department determined that the categorization of CO_2 as a "distillate of air" was not appropriate based on the chemical engineering understanding of the term, a determination consistent with the commenter's statement that "plain meaning" be applied to the interpretation of terms.

"Distillates of air," rather than being a commonly used term, is a chemical engineering term-of-art that refers to the distillation of air, in particular the common industry method for producing industrial gases know as cryogenic air separation, or cryogenic fractional distillation (Kirk-Othmer, *Encyclopedia of Chemical Technology*, Third Edition, Vol. 15, pp. 935-936). According to chemical engineering understanding, "[d]istillation is defined broadly as the separation of more volatile materials from less volatile materials by a process of vaporization and condensation. In engineering terminology, the separation of a liquid from a solid by vaporization is considered evaporation (qv), and the term

distillation is reserved for the separation of two or more liquids by vaporization and condensation." (Kirk-Othmer, *Encyclopedia of Chemical Technology*, p. 849)

Distillation is the most common industrial method of separation and purification of liquid components and is distinct from separation methods involving solid-liquid separation such as crystallization or adsorption (Kirk-Othmer, *Encyclopedia of Chemical Technology*, p. 883). Air separation requires cooling air into a liquid form to enable the distillation process. Prior to distillation of air, CO_2 is separated out from air through the process of adsorption before the cooled liquefied air enters the distillation column, since CO_2 freezes at low temperatures. As a result, CO_2 cannot properly be termed a distillate of air since it is considered an impurity that must be removed from air prior to the distillation process (Kirk-Othmer, *Encyclopedia of Chemical Technology*, pp. 935-936).

47. **COMMENT:** There is no explicit or implied environmental, public health, or climate change basis for removing CO_2 from the list of chemical species defined as "distillates of air." The Department's basis for removing CO_2 is based solely on an unrelated industrial process, and as such does not justify the proposed amendment. The APCA does not allow the Department to rely on an industrial process to justify the revision of the chemical species defined as "distillates of air." The proposal did not provide the "accepted chemical engineering definition" or cite the "common chemical engineering understanding of the term." (14)

RESPONSE: The Department stated in the Summary that the amendment of the definition of "distillates of air" was based both on conformance with the accepted chemical engineering understanding of the term and on the recognition that anthropogenic CO_2 emissions, and related climate change effects, have the potential to cause extreme damage to both the natural and built environment in New Jersey and create adverse human health impacts (36 N.J.R. 4610). The revision of the definition is consistent with the utilization of "distillates of air" as a proxy for chemical species that are not considered potentially problematic from a human health, welfare, or environmental standpoint (36 N.J.R 4610). The Department relied upon the sources identified in the response to comment 46 in determining the accepted chemical engineering definition and the common chemical engineering understanding of the term.

48. **COMMENT:** "Distillates of air," as used in the APCA, is best understood as the core constituents, elements, or components of air. (To support this statement, the commenter referenced the definition of "distillate" in *The Random House Webster's Unabridged Dictionary* as "any concentration, essence, or abstraction" and the definition in the *Encarta World English Dictionary, North American Edition*, as the "concentrated essence of something.") The Department apparently referenced the composition of "dry air" in originally defining the chemical species classified as "distillates of air." Removing CO_2 from the chemical species listed as "distillates of air" would only be appropriate in response to a finding by the Department that the scientific texts are incorrect. (9)

RESPONSE: The definition of "distillate" provided by the commenter is very broad and could potentially incorporate many air contaminants currently defined as such by the Department. The term "distillates of air" refers to a chemical engineering term-of-art, specifically the cryogenic fractional distillation of air. The Department proposed to revise the definition of "distillates of air" in part because the existing definition was not consistent with the chemical engineering understanding of the term. (The chemical engineering understanding of the term "distillates of air" is described in response to comment 46.)

It is unclear whether the composition of "dry air" was originally used by the Department in determining the chemical species to define as "distillates of air." The chemical species that had been included as "distillates of air" are not fully consistent with the chemical species that comprise "dry air" as defined by the International Union of Pure and Applied Chemistry (IUPAC).

49. **COMMENT:** The Department provided alternative and conflicting rationales for revising the chemical species listed as "distillates of air." The Department asserted that its original definition of "distillates of air" was incorrect and also asserted that the science of climate change has evolved to the point where CO_2 can no longer be considered benign. (9)

RESPONSE: The Department acknowledged that the current definition of "distillates of air" was inconsistent with the chemical engineering understanding

of the term. The Department could find no reference in the literature to "distillates of air" outside of the context of the chemical engineering process of cryogenic fractional distillation of air (with the exception of Department regulations and a reference to "distillates of air" in a state of Louisiana 1999 SIP filing with the EPA). The Department also acknowledged that a reasonable interpretation of prior statutory and regulatory intent was that the term "distillates of air" was used by the Legislature and the Department as a proxy for chemical species that are not potentially hazardous or problematic, not known to cause environmental impacts, and not generally addressed by air pollution control measures.

The Department stated in the Summary (36 N.J.R. at 4607 and 4609-4610) that the existing composition of chemical species defined as "distillates of air" was technically inaccurate based on the chemical engineering understanding of the distillation of air process (cryogenic fractional distillation of air), and that the inclusion of CO_2 in the chemical species listed as "distillates of air" was no longer appropriate, given the intent of the "distillates of air" classification at N.J.S.A. 26:2C-2 and the Department's intent in defining "air contaminant" throughout N.J.A.C 7:27, based on the evidence that anthropogenic CO_2 emissions are increasing and resulting in significant adverse impacts by driving climate change.

50. **COMMENT:** The term "distillates of air" was used in the APCA, N.J.S.A. 26:2C-2 et seq., to help define the meaning of "air contaminant" present in the outdoor atmosphere. CO_2 comprises part of normal unpolluted air. The

consideration of CO_2 as an impurity that must be removed prior to cryogenic fractional distillation of air has nothing to do with the contamination of the air in the outdoor atmosphere. (9)

RESPONSE: As discussed in the response to comments 12 and 13, N.J.S.A. 26:2C-2 does not define the term "distillates of air." Therefore, the Department is not bound by a statutory definition of the term.

The Department agrees that CO_2 in concentrations consistent with the natural carbon cycle comprises a normal part of "unpolluted air." However, anthropogenic emissions of CO_2 are increasing the global atmospheric concentration of CO_2, which is altering the global carbon cycle and driving climate change. The Department's proposal considers only anthropogenic CO_2 emissions emitted by sources regulated by the Department, not CO_2 present in the atmosphere as part of the natural carbon cycle.

The Department references a chemical engineering term-of-art in using "distillates of air" as a proxy for chemical species that are not considered to be potentially problematic from a human health, welfare, or environment standpoint. As mentioned in the responses to comments 47 and 49, the Department did not base the revision of the definition of "distillates of air" solely on the process of cryogenic fractional distillation of air.

51. COMMENT: The Department should not have revised the definition of "distillates of air" based on the consideration of CO_2 as an impurity that must be

removed from air prior to the cryogenic fractional distillation of air. By this definition only nitrogen and oxygen could be considered "distillates of air" and all other gases (argon, helium, krypton, neon, and xenon) would be impurities and could not be properly defined as "distillates of air," given the Department's rationale. (3, 13, 15, 21, 36, 38)

RESPONSE: The process of distillation of air is discussed in the response to comment 46. The other chemical species mentioned (argon, helium, krypton, neon, and xenon) can be separated from air through the distillation process. The presence of these chemical species as impurities present in trace amounts in commonly used industrial gases such as oxygen and nitrogen, or the economic attractiveness of producing these chemical species from distillation of air, rather than separation from other gas streams (such as separation of helium from natural gas, which is more economically viable than separation from air, due to the higher concentration of helium present in natural gas) has no bearing on whether they can be properly defined as "distillates of air." Specialty gases, such as argon, krypton, neon, xenon, are commercially produced through distillation of air.

52. **COMMENT:** Since CO_2 is a naturally occurring chemical species that is necessary for life, if CO_2 were no longer considered a "distillate of air" the carbon cycle would no longer function. (9)

RESPONSE: The Department acknowledges that CO_2 is a naturally occurring compound and is necessary to sustain life. However, the formal determination and justification regarding the merit of regulating CO_2 as an air contaminant recognized that anthropogenic CO_2 emissions are altering the global carbon cycle and resulting in an increase in global atmospheric concentration of CO_2 that is driving climate change.

53. **COMMENT:** The Department cannot classify CO_2 as an air contaminant unless it is prepared to apply the same designation to water vapor, which is the main greenhouse gas present in the atmosphere. Since the Department argues that both water vapor and CO_2 are impurities that must be removed prior to cryogenic fractional distillation of air, both should not technically be considered "distillates of air." The proposal is internally inconsistent because the Department is not contemplating classification of water vapor as an air contaminant. (25)

RESPONSE: The Department based its rationale on both the increase in atmospheric CO_2 concentrations that have been linked to adverse climate change impacts and the appropriateness of classification of CO_2 as a "distillate of air" on a technical basis. The atmospheric concentration of water vapor is not independently increasing (although increasing concentration is a projected by-product of climate change) and adverse impacts have not been tied to anthropogenic emissions of water vapor.

54. **COMMENT:** The proposed amendments do not achieve regulatory consistency with regard to the definition of "distillates of air" across subchapters of N.J.A.C. 7:27. The definition of "distillates of air" at N.J.A.C. 7:27-16.1 includes carbon dioxide, but the Department did not propose to change the definition of "distillates of air" at N.J.A.C. 7:27-16.1. The definition of "air contaminant" at N.J.A.C. 7:27-13.1 does not include the terms "water and distillates of air," even though the APCA, which would appear to be controlling, does include these terms. (3, 13, 14, 36, 37, 38)

RESPONSE: The intent of the proposal was to revise the definition of air contaminant across N.J.A.C. 7:27. The proposal stated that the exclusion of CO_2 as an air contaminant is no longer valid, given the intent of the Department's definition of air contaminant throughout N.J.A.C. 7:27 and the definition of air pollution at N.J.A.C. 7:27-5.1, since "scientific evidence has evolved to the point that adverse environmental and human health impacts due to increasing concentrations of CO_2 in the atmosphere are now clear" (36 N.J.R. 4607). The proposal also stated that the Department "proposes to revise the current definition of distillates of air in N.J.A.C. 7:27" in order to "recognize that anthropogenic CO_2 emissions, and related climate change effects, have the potential to cause extreme damage to both the natural and built environment in New Jersey and create adverse human health impacts" (36 N.J.R. 4610).

At N.J.A.C. 7:27-16.1 the definition of "distillates of air" has been modified on adoption to exclude CO_2, consistent with the new definition of "distillates of air" at N.J.A.C. 7:27-8.1, 7:27-17.1, 7:27-19.1, and 7:27-22.1.

As to the definition of "air contaminant," the statutory definition is controlling. The Department acknowledges that the definition of "air contaminant" in the various subchapters of N.J.A.C. 7:27 do not all track the statutory definition; however, this inconsistency will be addressed in future rulemakings to ensure the regulatory definition throughout the Air Pollution Control rules is that set forth in the Air Pollution Control Act. The definition is the statutory definition in the following subchapters: subchapter 16 (volatile organic compounds); subchapter 17 (toxic substances); subchapter 18 (new or altered sources); subchapter 19 (NOx); subchapter 21 (emission statements); subchapter 22 (operating permits); and subchapter 27 (mercury).

Linking of Proposal to Future Regulatory Requirement(s)

55. COMMENT: Based on the Department's assertion that the proposal is a prelude to potential future regulatory control of CO_2 emissions, it is premature to classify CO_2 as an air contaminant in New Jersey. The Department has not completed adequate analysis of the uncertainties of controlling CO_2 emissions at a sub-national spatial scale, such as New Jersey. Since this analysis has not been completed, it is premature to classify CO_2 as an air contaminant targeted for regulation. (3, 13, 15, 21, 36, 38)

RESPONSE: The adopted amendments do not regulate emissions of CO_2, but do classify CO_2 as an air contaminant. Analysis of the economics and potential impacts of control of CO_2 emissions would depend on the specifics of any future proposed regulatory initiative. It is neither appropriate nor possible to fully evaluate hypothetical regulatory impacts. Classifying CO_2 as an air contaminant does not require the evaluation of the potential benefits and costs of hypothetical regulatory approaches to controlling CO_2 emissions.

Should the Department proceed with regulatory initiatives, it will do so in a measured fashion that fully evaluates potential benefits and impacts of the regulatory proposal in question and affords the public an opportunity to participate in the regulatory development process.

56. COMMENT: The Department has provided inadequate study and discussion of the technical basis, feasibility, and cost of controlling CO_2 emissions and the attendant impact on New Jersey industry, business, and consumers. Since this analysis has yet to be conducted, the Department's approach in classifying CO_2 tied to consideration of a RGGI model rule is premature. Prior to implementing a cap-and-trade program to control CO_2 emissions, significant analyses of the costs and benefits of such a program must be conducted. (3, 13, 15, 21, 36, 38)

RESPONSE: The adopted amendments do not regulate emissions of CO_2, but do classify CO_2 as an air contaminant (see response to comment 55).

Should the Department move forward with the implementation of a cap-and-trade program to control CO_2 emissions, it will evaluate the projected impacts of any program ultimately proposed.

57. COMMENT: The reclassification of CO_2 as an air contaminant is procedurally necessary only upon New Jersey's adoption and implementation of a RGGI model rule. All regulatory changes that may be required by a RGGI model rule should be considered as part of a unified rulemaking or legislative effort that includes a stakeholder process. If the current proposal is adopted prior to implementation of a RGGI model rule, New Jersey's power generation industry would be subject to the unnecessary risk that the designation of CO_2 as an air contaminant would be used for regulatory, taxation, or fee purposes. (30)

RESPONSE: The adopted rules are an initial step that sets the stage for considering a model rule produced through the Regional Greenhouse Gas Initiative, or other measures to regulate CO_2 emissions. (See 36 N.J.R. at 4607.) Should the Department undertake rulemaking to implement RGGI, or other regulatory measures addressing CO_2 emissions, the public will have an opportunity to comment.

The adopted amendments do not subject sources to the risk of imposition of emissions fees for CO_2 emissions, because the amendments do not alter the definition of "regulated air contaminant" at N.J.S.A 26:2C-2, which definition is based on the Federal definition at 40 CFR 70.2. The Department is authorized by

N.J.A.C. 26-2C-9.5 to impose emission fees only for emissions of regulated air contaminants. Because CO_2 is not a regulated air contaminant, the Department may not, under the existing statutory framework, impose emission fees for CO_2.

58. **COMMENT:** Although the proposed amendments would not impose a new fee, tax, or regulatory requirement, it would make the imposition of new ones possible. New Jersey facilities already pay the highest emissions fees in the nation and the proposal would expose these sources to the potential of additional emissions fees. The emissions fees imposed on New Jersey power plants create competitive advantages for "dirtier" out-of-state electric generators. Imposition of emissions fees for CO_2 would exacerbate this situation. (30)

RESPONSE: The adopted amendments do not subject sources to the risk of imposition of emissions fees for CO_2 emissions, because the amendments do not alter the definition of “regulated air contaminant” at N.J.S.A 26:2C-2. The Department is authorized by N.J.A.C. 26-2C-9.5 to impose emission fees only for emissions of regulated air contaminants. Because CO_2 is not a regulated air contaminant, the Department may not, under the existing statutory framework, impose emission fees for CO_2. Given this, the commenter’s concerns about the creation of a competitive disadvantage relative to out-of-State electric generators are speculative.

59. **COMMENT:** The proposal is the first step to future regulations addressing CO_2 emissions. The proposal should be withdrawn until a comprehensive review of the regulatory and economic impacts can be completed, including input from all affected parties. Regulation of CO_2 should be undertaken on a national and global scale and should not be considered on a state or regional scale. (13)

RESPONSE: Any future regulatory proposal would address the projected impacts of that proposal, including the impacts stemming from the geographic scope of the regulatory program, should they be material to the projected impacts of the program.

60. **COMMENT:** The Department's expectation that the amendments will have a positive economic impact is unrealistic and does not consider the resultant increase in energy, compliance, and production costs that will be borne by industry. (42)

RESPONSE: The amendments as adopted do not establish any additional regulatory or reporting requirements. The Department's assertion that the classification of CO_2 as an air contaminant may create positive economic benefits reflects a valid assumption, since it may encourage regulated sources to engage in voluntary energy efficiency and process improvement activities that provide net economic benefits. A rational economic actor would not be expected to engage in

voluntary activities that did not produce net economic benefits, and therefore voluntary activities should not be expected to produce adverse economic impacts.

Permitting Issues

61. **COMMENT:** The thresholds for permitting requirements for CO_2 under N.J.A.C. 7:27-8 and 7:27-22 were too low considering the magnitude of potential CO_2 emissions from even very small fuel combustion sources. N.J.A.C. 7:27-8.4 requires air contaminants to be listed in a permit application and the permit if the contaminant's potential-to-emit (PTE) exceeds reporting thresholds listed in the subchapter (see N.J.A.C. 7:27-8, Appendix 1, Table A). If an individual source emits CO_2 at or above a 0.05 lb./hr. reporting threshold, a minor source air pollution permit would be required. N.J.A.C. 7:27-8.2 requires "certain sources of air contaminants" to obtain air permits. N.J.A.C. 7:27-8.2 establishes equipment-specific applicability for permitting. N.J.A.C. 7:27-8.2(c)19 requires air permitting for all equipment that has a PTE an air contaminant and processes greater than 50 pounds of raw material an hour. (3, 4, 6, 7, 8, 13, 16, 17, 26, 36, 38, 41, 42)

RESPONSE: The Department has modified the rules on adoption to clearly exempt CO_2 emissions from additional reporting and regulatory requirements at this time. The modifications, discussed below, are consistent with the Department's statements in the Social Impact at 36 N.J.R. at 4610 that the

amendments would not regulate emissions of CO_2, and in the Economic Impact at 26 N.J.R. at 4610 that the amendments create no additional regulatory or reporting requirements for regulated entities.

At N.J.A.C. 7:27-1.36 a new subsection (N.J.A.C. 7:27-1.36(b)) is added on adoption to make it clear that a facility's, or item of equipment's or item of control apparatus's, actual or potential emissions of carbon dioxide (CO_2) shall not be a basis for any of the following under N.J.A.C. 7:27:

- A requirement to include in a permit application information about CO_2 emissions
- A requirement to obtain a permit under N.J.A.C. 7:27-8 or 7:27-22
- A limitation on CO_2 emissions in a permit
- A requirement for a state-of-the-art analysis with respect to the control of CO_2 emissions
- A fee
- A facility being considered a "major facility"
- An item of equipment or a source operation being considered a "significant source"
- The applicability of any other requirement under 7:27, other than the requirements of 7:27-21 (which require facilities to which subchapter 21 applies to report CO_2 emissions in their emission statements).

At N.J.A.C. 7:27-8.1 the definition of "major facility" was changed by inserting the words "except carbon dioxide (CO_2)" in the table listing major facility thresholds, thereby excluding a facility's potential to emit CO_2 from the air contaminants considered in determining major facility status.

At N.J.A.C. 7:27-8.2(c) the words "except carbon dioxide (CO_2)" were added, exempting equipment or source emissions of CO_2 from determining whether a source is defined as a "significant source" under N.J.A.C. 7:27-8.2(c).

At N.J.A.C. 7:27-8.12(a)2 the words "except carbon dioxide (CO_2)" were added, excluding the potential to emit CO_2 as a trigger of a state-of-the-art control apparatus review.

At N.J.A.C. 7:27-8 Appendix I, Table A, "Reporting and SOTA thresholds (Potential to emit)," the words "except carbon dioxide (CO_2)" were added to note number 3, exempting CO_2 from the term "greenhouse gas" in this note.

At N.J.A.C. 7:22.1 the definition of "major facility" was changed by inserting the words "except carbon dioxide (CO_2)" in the table listing major facility thresholds, thereby excluding a facility's potential to emit CO_2 from the air contaminants considered in determining major facility status.

At N.J.A.C. 7:27-22.2(a)2, language was inserted making it clear that emissions of CO_2 are not to be used in determining applicability under 7:27-22.2.

At N.J.A.C 7:27-22.2(a)2, the words "except carbon dioxide (CO_2)" were inserted in Table 1, which lists major facility thresholds. This addition therefore excludes a facility's potential to emit CO_2 from the air contaminants considered in determining major facility status.

At 7:27-22.35(b), the words "except carbon dioxide (CO_2)" were added directly after the phrase "any other air contaminant." This exempts sources from demonstrating compliance under 7:27-22.35(b) based solely on the potential to emit CO_2.

At N.J.A.C. 7:27-22.35(c) the words "except carbon dioxide (CO_2)" were added directly after the phrase "any other air contaminant." This exempts sources from demonstrating compliance under 7:27-22.35(c) based solely on the potential to emit CO_2.

At N.J.A.C. 7:27-22.35(c) the words "except carbon dioxide (CO_2)" were added directly after the phrase "any other air contaminant." This exempts sources from the requirements under N.J.A.C. 7:27-22.35(c)5 based solely on the potential to emit CO_2.

At N.J.A.C. 7:27-22 Appendix I, Table A, Thresholds for Reporting Emissions of Air Contaminants Other than Hazardous Air Pollutants (HAPs), the words "except CO_2" were added parenthetically directly after the phrase "any other air contaminant" in note number 1.

62. **COMMENT:** The amendments would trigger Title V permitting requirements (40 CFR 70) for a large number of sources. According to N.J.A.C. 7:27-22.2(a), facilities with a PTE greater than 100 tons/year of any "other air contaminant" must obtain Title V air permits. N.J.A.C. 7:27-22.6 requires "other" air contaminants with a PTE in excess of 100 tons/year facility-wide to be included in the Title V permit application and permit, for each source that has a PTE in excess of 0.05 lb./hr (see N.J.A.C. 7:27-22, Appendix, Table A). (3, 4, 6, 7, 8, 13, 16, 17, 26, 36, 38, 41, 42)

RESPONSE: As explained in response to comment 61, the Department has modified the rules on adoption to exempt CO_2 emissions from regulatory requirements at N.J.A.C. 7:27-22.

63. **COMMENT:** The proposal would trigger a state-of-the-art pollution control review (SOTA) requirement for every new and modified source of CO_2 that has a potential-to-emit (PTE) in excess of 5 tons/year. N.J.A.C. 7:27-8.12 references Appendix 1, Table A, wherein the SOTA threshold for greenhouse gases is noted in footnote 1 as 0.05 lbs./hour or 5 tons/year for "any other air contaminant." N.J.A.C. 7:27-22.35(b) states that equipment with a PTE of "any other air contaminant" greater than 5 tons/year triggers the SOTA requirement. (6, 8, 17, 41, 42)

RESPONSE: As explained in response to comment 61, the Department has modified the rules on adoption to exempt CO_2 emissions from SOTA requirements at N.J.A.C. 7:27:22 and 7:27-8.

64. **COMMENT:** The state-of-the-art (SOTA) pollution control review thresholds are set for other air contaminants that have well-established local or regional health effects. These SOTA thresholds are entirely inappropriate for CO_2 emissions, which are a global issue. (6)

RESPONSE: As explained in response to comment 61, the Department has modified the rules on adoption to exempt CO_2 emissions from SOTA requirements at N.J.A.C. 7:27-22 and 7:27-8.

65. COMMENT: The creation of another pollutant subject to Title V programs might have the unintended consequence of making CO_2 emissions the target of emissions fees. New Jersey facilities already pay the highest emissions fees in the nation. (3, 13, 15, 21, 36, 38)

RESPONSE: The adopted amendments do not subject sources to the risk of imposition of emissions fees for CO_2 emissions. The Department is authorized by N.J.A.C. 26-2C-9.5 to impose emission fees only for emissions of regulated air contaminants. Because CO_2 is not a regulated air contaminant, the Department may not, under the existing statutory framework, impose emission fees for CO_2. As explained in the response to comment 61, the Department modified N.J.A.C. 7:27-1.36 on adoption to make it clear that emissions of carbon dioxide or the potential to emit carbon dioxide would not result in emissions fees (see response comment 49).

66. COMMENT: The Department's analyses of the economic and employment impacts of the proposal are incomplete. The Department has not identified or quantified the cost of the proposed amendments on small businesses and the agricultural industry. The amendments trigger permitting requirements for

sources subject to N.J.A.C. 7:27-22 Operating Permits and N.J.A.C. 7:27-8 Permits and Certificates for Minor Facilities (and Major Facilities without an Operating Permit). These requirements would create significant impacts for many large, medium, and small businesses. (42)

RESPONSE: The Department has modified the rules on adoption to make clear the release of CO_2 does not establish new regulatory or reporting requirements. See response to comments 61 for a description of specific changes made on adoption. The Department's assessment of the economic and employment impacts of the proposal is valid.

67. COMMENT: The Department failed to identify the interdependencies and regulatory impacts of its permitting regulations. As a result, the Department's assertion that the amendments would not regulate CO_2 emissions and would create no additional regulatory or reporting requirements for regulated entities was flawed. (42)

RESPONSE: See response to comments 61, 62, 63, and 66. The Department has modified the rules on adoption to preclude this result. See response to comment 61 for a description of the specific changes made on adoption.

68. COMMENT: Classifying CO_2 as an air contaminant would create unintentional and inflexible barriers that might discourage voluntary reductions of CO_2

emissions. The amendments would significantly expand the universe of sources requiring operating permits. This would create a disincentive for sources to make voluntary CO_2 emissions reductions, since projects undertaken to make such reductions would run the risk of requiring a permit modification. The amendments would also exacerbate the Department's current permitting backlog. (42)

RESPONSE: The Department has modified the rules on adoption to preclude this result. See response to comment 61 for a description of the specific changes made on adoption. It is not expected that the adopted rules will create any regulatory disincentives to voluntary actions that reduce CO_2 emissions. Confirming that CO_2 is an air contaminant that is causing adverse effects may create incentives to reduce CO_2 emissions.

69. **COMMENT:** CO_2 emitted from oxygen production plants ("cryoplant") used to produce oxygen for oxygen-activated sludge plants should be exempt from regulatory requirement. CO_2 emissions from a cryoplant come from the air that is fed to the cryoplant for separation. (26)

RESPONSE: The rules as adopted do not impose any new regulatory or reporting requirements on any facility. Accordingly, discussion of the possible exemption from regulation of any type of facility is premature.

Economic Issues

70. **COMMENT:** Research analyzing pollution control efforts for other pollutants, as well as early regulatory efforts to control CO_2 emissions, have shown that with flexibility and innovation air pollution can be controlled without increasing energy costs substantially. Controlling CO_2 emissions if done right, by providing flexibility and encouraging innovation, could stimulate employment and economic growth in New Jersey. Regulatory flexibility and regulatory programs that encourage innovation do not lead to an increase in regulatory bureaucracy. (20)

71. **COMMENT:** Some of the economic projections of the economic costs of greenhouse gas regulation are very overstated. (33)

RESPONSE TO COMMENTS 70 AND 71: The adopted amendments do not regulate CO_2 emissions or create new reporting requirements for sources. Therefore, a review of the regulatory and economic impacts of specific regulatory regimes addressing CO_2 emissions is not possible or warranted. At such time as the Department proposes rules to regulate CO_2, it will provide a detailed economic impact analysis.

72. **COMMENT:** The Department has a responsibility to minimize the costs of regulating CO_2 emissions through participation in allowance trading programs in

the Northeast and encouraging businesses to join other trading systems, such as the Chicago Climate Exchange. Business has a responsibility to lead on the issue of climate change. (33)

RESPONSE: The adopted amendments do not regulate CO_2 emissions or create new reporting requirements for sources. Therefore, a review of the regulatory and economic impacts of specific regulatory regimes addressing CO_2 emissions is not possible or warranted.

73. COMMENT: New Jersey will be placing its economy, workers, consumers, and citizens at a competitive disadvantage by proceeding with regulation of CO_2 prior to the development of a national or global program to address CO_2 emissions. (3, 13, 15, 16, 21, 36, 38)

RESPONSE: The adopted amendments do not result in the regulation of CO_2 emissions, but would enable the Department to do so in the future, as warranted.

In general, the cost of reducing CO_2 emissions will vary from company to company, and it cannot be assumed *a priori* that the cost will be large relative to the total revenues of entities that might be affected by regulation of CO_2. A number of large companies and other organizations have voluntarily undertaken to reduce their CO_2 emissions, indicating that the cost of doing so was believed to be outweighed by the benefits even in the absence of a national regulatory regime addressing CO_2 emissions. If the Department does propose regulation of CO_2

emissions in the future, the projected economic impacts of those proposed regulations will be thoroughly examined.

74. **COMMENT:** The proposal would result in little environmental improvement to New Jersey at a disproportionately large cost. The proposal should be withdrawn until stakeholder input can be considered, a national consensus reached, and a state-level approach to addressing greenhouse gases can be developed that is consistent with Federal law. (38)

RESPONSE: Because the adopted amendments do not regulate CO_2 emissions or create new reporting requirements for sources, a review of the environmental and economic impacts of specific regulatory regimes addressing CO_2 emissions is not possible or warranted. At such time as the Department proposes rules to regulate CO_2, it will provide a detailed environmental and economic impact analyses.

75. **COMMENT:** Future regulations addressing CO_2 emissions would provide little additional benefit in reducing criteria pollutants beyond the benefits provided by existing regulations addressing criteria pollutants. The Department has not shown that voluntary reductions of CO_2 would provide co-benefits in the form of criteria pollutant reductions associated with reductions in CO_2 emissions. Any such voluntary reductions would not be cost effective, since they would involve energy

rationing, which would be more expensive than direct efforts to reduce emissions of criteria pollutants. (25)

RESPONSE: The purpose of any future regulations addressing CO_2 emissions would primarily be the reduction of climate-altering anthropogenic greenhouse gas emissions. Resulting reductions in criteria air pollutants would be a welcome co-benefit. One way of reducing CO_2 emissions is by improving the efficiency of fuel combustion and energy end-use. Another option is generating energy from non-emitting sources. Any reduction in fossil fuel consumption is likely to entail some reduction in criteria pollutant emissions. The precise amount of that reduction will depend on the method used to reduce CO_2 emissions.

The Department sees no basis for concluding that compliance with a CO_2 emissions constraint would require "energy rationing." Such a requirement would instead create an incentive to increase supply-side and end-use energy efficiency, as well as energy generation from non-emitting sources. The Department also disputes the notion that voluntary emissions reductions would require "energy rationing." Assuming that entities are rational actors, voluntary emissions reductions will be limited to actions that produce net economic benefits or provide other substantial non-economic benefits to voluntary actors.

76. **COMMENT:** The Department is mistaken in its conclusion that the amendments will not result in any negative impact on employment and might have a positive impact on jobs. Projections of economic impacts resulting from United States

implementation of the Kyoto Protocol indicate otherwise. Any regulation of CO_2 in New Jersey alone would result in a shifting of industry and jobs out of the State. (16)

RESPONSE: Because the adopted amendments do not regulate CO_2 emissions or create new reporting requirements for sources, a review of the economic impacts of specific regulatory regimes addressing CO_2 emissions is not possible or warranted. At such time as the Department proposes rules to regulate CO_2, it will provide a detailed economic impact analysis. The amendments as adopted have no negative economic impacts. The Department's assertion that voluntary emissions reduction efforts may result in a positive impact on employment is appropriate, since jobs would be created through the initiation of energy efficiency projects, and increased energy efficiency would improve the relative economic competitiveness of industry in the State.

The macroeconomic impacts of any future regulation of CO_2 emissions would depend on the specific content of the rules involved, and the Department will address such issues if and when it proposes to regulate CO_2 emissions. Numerous studies of energy efficiency have found that increased energy efficiency provides net economic benefits. Before adopting any specific regulation relating to CO_2, the Department would carefully examine the projected economic impacts on New Jersey businesses and employment.

77. **COMMENT:** Adoption of the amendments might create regulatory uncertainty, which may encourage companies to delay implementation of planned emissions reduction or energy efficiency projects until New Jersey regulatory programs addressing CO_2 emissions are implemented. (22)

RESPONSE: The classification of CO_2 as an air contaminant by the Department makes it clear that CO_2 emissions are of concern and that future regulatory initiatives may be considered in the State. This classification reduces regulatory uncertainty, rather than increases it.

A number of businesses and other organizations in New Jersey have voluntarily adopted measures to reduce their greenhouse gas emissions even though the treatment of such "early adoption" emissions reductions under a potential future regulatory regime is uncertain, indicating that those organizations are, in fact, convinced that reducing CO_2 emissions is in their economic interest. In proposing a definitional change at this time, with any potential regulation of CO_2 emissions deferred until a later date, the Department is in fact exercising caution in this area and approaching consideration of future regulation of CO_2 emissions in a deliberate manner, which should be reassuring to potentially regulated entities.

78. **COMMENT:** The Department should consider withdrawing the proposal until such time that a comprehensive review of the regulatory and economic impacts are completed with input from all affected parties. (6)

RESPONSE: As mentioned in the responses to comments 11, 19, and 39, the adopted amendments do not regulate CO_2 emissions, but enable the Department to do so in the future, as warranted. As such, the commenter's statements addressing analysis of the impacts of regulation of CO_2 emissions are premature and beyond the scope of this proposal. There will be ample opportunity to comment on such potential impacts if and at such time that the Department decides to initiate a rulemaking to regulate CO_2 emissions.

State Action Addressing CO_2 Emissions and Climate Change

79. COMMENT: The Department should be commended for taking a leadership role on the issue of climate change. Given the well-established nature of climate change science, this science should have some bearing on Department policy. As one of the larger state economies in the United States, New Jersey has an obligation to take action on climate change. New Jersey needs to act locally in order to play its part in global environmental solutions. New Jersey, as one of the wealthiest states in the wealthiest country in the world, has a moral obligation to find ways to address the dangers posed by climate change and CO_2 emissions. New Jersey's decision to expand its emissions statement rules to require reporting for CO_2 and methane resulted in Maine and Connecticut following suit, and other states are actively considering comparable requirements. New Jersey's leadership in the climate change arena has been critical to current regional programs now

moving forward on the east and west coasts. State action on climate change is not troubling, since action by innovative states on environmental issues has led to national action in the past. (5, 12, 18, 27, 33)

RESPONSE: The Department acknowledges the commenters support.

80. COMMENT: Regulation of CO_2 emissions in New Jersey alone would not lead to the reversal of the impacts of climate change, or have a perceptible impact in mitigating climate change. The proposal implies that such regulation by the Department alone would reverse the impacts of climate change. (3, 9, 15, 19, 21, 36, 38)

RESPONSE: The Department determined, based on compelling scientific evidence, that CO_2 emissions are creating significant adverse impacts on the State today, and that a continued rise in global CO_2 emissions is projected to result in an increase in adverse impacts. As a result, the Department determined that anthropogenic CO_2 emissions are creating adverse impacts that clearly meet a threshold of adverse impacts consistent with the Department's regulatory definition of air pollution at N.J.A.C. 7:27-5.1 and the statutory definition of air pollution at N.J.S.A. 26:2C. As such, the Department determined that regulating CO_2 emissions is in the best interest of human health, welfare, and the environment.

Moreover, although the Department acknowledges that reducing global CO_2 emissions will ultimately require action on a global scope, such a reduction will result from incremental reductions by multiple national and state jurisdictions. By logical extension, no one party could reverse the effects of a global pollutant absent a joint effort. In this context, New Jersey CO_2 emissions are significant. New Jersey CO_2 emissions in 2000 exceeded the national emissions of 25 of the 39 nations that agreed to the emissions reduction targets in the Kyoto Protocol (note that not all Annex B countries – those with binding emissions limits – have ratified the treaty, including the United States). In general, the ultimate need for global action does not argue against New Jersey considering taking action to incrementally reduce the global atmospheric loading of CO_2 resulting from CO_2 emissions in New Jersey.

As a coastal state particularly vulnerable to the impacts of climate change, New Jersey has a responsibility to consider effective actions to reduce CO_2 emissions in the State, while simultaneously advocating for broader Federal and international action to address the issue. New Jersey has been active in this regard, and views the classification of CO_2 as an air contaminant as a leadership action that will broaden support for such efforts.

81. **COMMENT:** Any efforts to reduce emissions of global air constituents, such as CO_2, should be pursued at the national or global level, not at the State level. Any reductions in CO_2 emissions in New Jersey due to mandatory requirements will result in no net reduction in emissions, since corresponding emissions will

increase in other states or nations that do not face mandatory emissions reduction requirements. By attempting to regulate a global emission in a global economy, State control and enforcement of CO_2 emissions from stationary sources would create inequities and negative incentives for New Jersey industry in the marketplace. Unless these inequities are addressed, regulation of CO_2 emissions by the Department could create a system that drives energy-intensive businesses to other nations or states in the United States. (4, 15, 16, 42)

RESPONSE: The adopted amendments do not regulate CO_2 emissions, but enable the Department to regulate CO_2 emissions in the future, as warranted. As such, the commenters' statements addressing the adverse impact from regulation of CO_2 emissions at a sub-national scale are premature and beyond the scope of this rulemaking. There will be ample opportunity to comment on such potential impacts if and at such time that the Department decides to initiate a rulemaking to regulate CO_2 emissions.

The Department will evaluate the impact of geographic scope on program effectiveness for any future regional or New Jersey effort to reduce CO_2 emissions, if material to the effectiveness of the proposed regulation. However, the Department does not agree with the general assertion that emissions reduction programs cannot be pursued at the state or regional level. This assertion is clearly not supported by the positive results of other State-specific and regional programs addressing other air contaminants, such as the Ozone Transport Commission (OTC) NO_x Budget Program.

82. **COMMENT:** Because the major source of anthropogenic CO_2 emissions within New Jersey and the United States is due to fossil fuel combustion, regulation of CO_2 emissions is best considered in the context of a comprehensive national energy plan that addresses intrastate and interstate commerce issues. (4)

RESPONSE: Environmental outcomes are often tied to energy policy choices, and that the link between energy and environmental policy is especially relevant to climate change policy. However, the Department disagrees that consideration of climate change policy should be limited to within the context of energy policy discussions. Adoption of this proposal complements existing State energy policy, in particular the multiple market transformation programs managed by the New Jersey Board of Public Utilities (NJ BPU) that provide incentives to support increased end-use energy efficiency and more rapid deployment of renewable energy resources, as well as renewable portfolio standard (RPS) regulations implemented by NJ BPU. The Department and NJ BPU actively collaborate together on energy and environment policy issues and proposals relevant to the State, such as the Regional Greenhouse Gas Initiative.

State-level regulation of CO_2 emissions would not necessarily create intrastate and interstate commerce issues. Other State-level policies addressing the electric power sector and indirectly impacting CO_2 emissions, such as renewable portfolio standards, have not resulted in such concerns.

83. **COMMENT:** A cap-and-trade program developed as part of the RGGI would have no discernable effect on global climate change. Any program that reduced CO_2 emissions would have high economic compliance costs, and any program applied at the regional level would have additional diseconomies of scale. As a result, any regulatory program administered by the Department that addressed CO_2 emissions would fail a rudimentary cost-benefit test. (25)

RESPONSE: Analysis of the economics and potential impacts of control of CO_2 emissions, as well as the projected environmental benefits, would depend on the specifics of a future proposed regulatory initiative. Absent any proposed regulation, it is impossible to fully evaluate hypothetical regulatory impacts. Classifying CO_2 as an air contaminant does not require the evaluation of the potential benefits and costs of hypothetical regulatory approaches to controlling CO_2 emissions. Should the Department proceed with the evaluation of regulatory initiatives, it will do so in a measured fashion that fully evaluates potential benefits and impacts of the regulatory proposal in question and affords the public an opportunity to participate in the regulatory development process. As such, the commenter's statements addressing the adverse impacts of regulation of CO_2 emissions, and in particular the regulation of CO_2 emissions at a sub-national scale, are premature and beyond the scope of this proposal.

A number of strategies for reducing CO_2 emissions increase relative economic competitiveness and provide businesses with positive net revenues, as

demonstrated by the current pursuit of significant private sector voluntary actions to reduce CO_2 emissions across economic sectors in the State.

Federal Standards Statement

Executive Order No. 27 (1994) and N.J.S.A. 52:14B-1 et seq. (P.L. 1995, c. 65) require State agencies that adopt, readopt or amend State rules that exceed Federal standards or requirements to include in the rulemaking document a Federal standards statement.

The Department is not aware of any analogous Federal standards or requirements related to CO_2 or the definition of CO_2 as an air contaminant.

The Department has compared the adopted amendments to N.J.A.C. 7:27-1.36, 8.1, 8.2, 8.12, Appendix 1, 16.1, 17.1, 19.1, 22.1, 22.2, 22.35, and Appendix to analogous Federal regulatory requirements. The adopted amendments are not being promulgated under the authority of, or in order to implement or comply with, any program under Federal law, or under a State statute that incorporates or refers to Federal law, Federal standards, or Federal requirements.

Full text of the adoption follows (additions to proposal indicated in boldface with asterisks ***thus***; deletions from proposal indicated in brackets with asterisks **[**thus**]**):

SUBCHAPTER 1. GENERAL PROVISIONS

7:27-1.36 Applicability

(a) Compliance with any subchapter of this chapter shall not relieve any person of the obligation to comply with all other applicable provisions of this chapter.

*(b) **A facility's actual emissions of carbon dioxide (CO_2) or potential emissions of CO_2, or an item of equipment's actual emissions of CO_2 or potential emissions of CO_2, or actual emissions of CO_2 or potential emissions of CO_2 from an item of control apparatus, is not a basis for any of the following under this chapter:**

1. A requirement to include in a permit application information about CO_2 emissions;

2. A requirement to obtain a permit under N.J.A.C. 7:27-8 or 7:27-22;

3. A limitation on CO_2 emissions in a permit;

4. A requirement for a state-of-the-art analysis with respect to the control of CO_2 emissions;

5. A fee;

6. A facility being considered a "major facility";

7. An item of equipment or a source operation being considered a "significant source"; or

8. The applicability of any other requirement under this chapter, other than the requirements of N.J.A.C. 7:27-21.*

SUBCHAPTER 8. PERMITS AND CERTIFICATES FOR MINOR FACILITIES

7:27-8.1 Definitions

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

….

"Major facility" means a facility which has the potential to emit any of the air contaminants listed below in an amount which is equal to or exceeds the applicable major facility threshold level given below. The major facility threshold levels are as follows:

Major Facility

Air contaminant	Threshold Level
Carbon monoxide	100 tons per year
PM-10	100 tons per year
TSP	100 tons per year

Sulfur dioxides	100 tons per year
NO_x	25 tons per year
VOC	25 tons per year
Lead	10 tons per year
Any HAP	10 tons per year
All HAPs, collectively	25 tons per year
Any other air contaminant, ***except CO_2***	100 tons per year

7:27-8.2 Applicability

(c) Any equipment or source operation that may emit one or more air contaminants***, except carbon dioxide (CO_2),*** directly or indirectly into the outdoor air and belongs to one of the categories listed below, is a significant source (and therefore requires a preconstruction permit and an operating certificate), unless it is exempted from being a significant source pursuant to (d) or (e) below:

1. through 20. (No change)

7:27-8.12 State of the art

(a) If an application proposes construction, installation, reconstruction, or modification of equipment and control apparatus which is a significant source

meeting the following criteria, the applicant shall document state of the art (SOTA) for the source:

1. (No change.)

2. The equipment and control apparatus has a potential to emit any other air contaminant or category of air contaminant***, except carbon dioxide (CO_2),*** at a rate equal to or greater than the SOTA threshold in Appendix 1, Table A incorporated herein by reference.

7:27-8 Appendix 1, Table A

APPENDIX 1

TABLE A

Reporting and SOTA thresholds

Air contaminant	Reporting Threshold[1] (in lbs/hour)	SOTA Threshold[2] (in tons/yr)
Total VOC	0.05	5.0

TSP	0.05	5.0
PM-10	0.05	5.0
NO_x	0.05	5.0
CO	0.05	5.0
SO_2	0.05	5.0
Each TXS	0.01	See Table B
Each HAP	See Table B	See Table B
Any air contaminant listed in footnote[3]	0.05	5.0

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[1] If a source emits an air contaminant that both belongs to an air contaminant class that appears on Table A and is also a HAP found on table B, emissions of the air contaminant must be taken into consideration in a permit application in determining if the Table A reporting threshold is met, as well as if the Table B

reporting threshold is met. If both the Table A and the Table B reporting thresholds are met, emissions of that air contaminant must be included in the emissions reported in application forms for both Table 1 air contaminants and Table 2 HAPs.

[2] If a source emits an air contaminant that appears on Table A and is also a HAP found on Table B, the lower of the two SOTA thresholds applies.

[3] Any 112 (r) contaminant; any stratospheric ozone depleting substance, or any greenhouse gas ***except carbon dioxide (CO_2).***

SUBCHAPTER 16. CONTROL AND PROHIBITION OF AIR POLLUTION BY VOLATILE ORGANIC COMPOUNDS

7:27-16.1 Definitions

The following words and terms, when used in this subchapter, have the following meanings, unless the context clearly indicates otherwise.

….

"Distillates of air" means helium (He), nitrogen (N_2), oxygen (O_2), neon (Ne), argon (Ar), krypton (Kr), ***and*** xenon (Xe)**[**, and carbon dioxide (CO_2)**]**.

….

SUBCHAPTER 22. OPERATING PERMITS

7:27-22.1 Definitions

The following words and terms, when used in this subchapter, have the meanings given below unless the context clearly indicates otherwise.

….

"Major facility" means a facility which constitutes a major source, as defined by EPA at 40 CFR § 70.2 or any subsequent amendments thereto, and that has the potential to emit any of the air contaminants listed below in an amount that is equal to or exceeds the applicable major facility threshold level. The major facility threshold levels are as follows:

Major Facility

Air Contaminant	Threshold Level
Carbon monoxide	100 tons per year
PM-10	100 tons per year
TSP	100 tons per year
Sulfur dioxide	100 tons per year
Oxides of nitrogen	25 tons per year
VOC	25 tons per year
Lead	10 tons per year
Any HAP	10 tons per year

All HAPs, collectively	25 tons per year
Any other air contaminant**,**	100 tons per year
except CO_2*	

7:27-22.2 Applicability

(a) This subchapter applies to any facility which is one of the following:

1. (No change.)

2. A facility which emits or has the potential to emit any of the air contaminants listed below in Table 1, in an amount which equals or exceeds the threshold amount for that contaminant. ***Emissions of carbon dioxide (CO_2) are not to be used in determining applicability under 7:27-22.2.***

Table 1

Air contaminant	Threshold Level
Carbon Monoxide	100 tons per year
PM-10	100 tons per year
TSP	100 tons per year
Sulfur Dioxide	100 tons per year
Oxides of Nitrogen	25 tons per year

VOC	25 tons per year
Lead	10 tons per year
Any other Air Contaminant*, **except CO_2***	100 tons per year

7:27-22.35 Advances in the art of air pollution control

(a) (No change.)

(b) For equipment and control apparatus with a potential to emit hazardous air pollutants at less than the de minimis levels specified by the EPA pursuant to 42 U.S.C. 7412(g) and with a potential to emit less than five tons per year of any other air contaminant, ***except carbon dioxide (CO_2),*** the applicant need not document advances in the art of air pollution control, but instead shall document compliance with:

1. through 4. (No change.)

(c) For equipment and control apparatus with a potential to emit any hazardous air pollutant equal to or greater than the de minimis levels specified by the EPA pursuant to 42 U.S.C. 7412(g) or with a potential to emit five tons per year or more of any other air contaminant, ***except carbon dioxide (CO_2),*** the applicant

shall document advances in the art of air pollution control, ***except for CO_2,*** in accordance with the following criteria, as applicable:

1. through 4. (No change.)

5. For any other air contaminant not covered under (c)1, 2, 3, or 4 above, emitted by a source operation with the potential to emit five or more tons per year of that air contaminant, ***except carbon dioxide (CO_2),*** the use of up-to-date technology and methods, reflected in equipment, control apparatus, and procedures, that when applied to an emission source will reasonably minimize emissions of that contaminant.

7:27-22 APPENDIX

TABLE A

Thresholds for Reporting Emissions of Air Contaminants Other than Hazardous Air Pollutants (HAPs)

Air Contaminant	Hourly Emissions (pounds per hour)

VOC	0.05
TSP	0.05
PM-10	0.05
NOx	0.05
CO	0.05
SO_2	0.05
Any other air contaminant (1)	0.05

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(1) This air contaminant category shall apply to any other air contaminant ***(except CO_2)***, other than hazardous air pollutants (HAPs) that the facility has the potential to emit in a quantity greater than or equal to 100 tons per year.