ENVIRONMENTAL PROTECTION

OFFICE OF POLICY, PLANNING AND SCIENCE

Greenhouse Gas Monitoring and Reporting Program

Proposed Amendments:	N.J.A.C. 7:1G-3.1, 3.2 and 5.3; 7:27-21.1 through 21.3, and 21.5
Proposed New Rules:	N.J.A.C. 7:27-21.11 and 21.12
Proposed Recodification:	N.J.A.C. 7:21-11 as 7:21-13
Authorized by:	Mark N. Mauriello, Acting Commissioner, Department of Environmental Protection
Authority:	N.J.S.A. 13:1B-3(e), 26:2C-1 et seq., 26:2C-37 et seq.
Calendar reference:	See Summary below for explanation of exception to calendar requirement.

DEP Docket Number: 21-08-12/665

Proposal Number: PRN 2008-

A public hearing concerning this proposal will be held on March 3, 2009 at 9:00 A.M at:

First Floor Public Hearing Room

Department of Environmental Protection

401 E. State Street

Trenton, New Jersey

Directions to the hearing room may be found at the Department's website address at http://www.state.nj.us/dep/where.htm.

Submit written comments by (60 days after publication) to:

Alice A. Previte, Esq.

Attn: DEP Docket No. 21-08-12/665

Office of Legal Affairs

New Jersey Department of Environmental Protection

401 East State Street, 4th Floor

PO Box 402

Trenton, NJ 08625-0402

Written comments may also be submitted at the public hearing. It is requested (but not required) that anyone submitting oral testimony at the public hearing provide a copy of any prepared text to the stenographer at the hearing.

The Department of Environmental Protection (Department) requests that commenters submit comments on disk or CD as well as on paper. Submittals on disk or CD must not be access-restricted (locked or read-only) in order to facilitate use by the Department of the electronically submitted comments. The Department prefers Microsoft Word™ 6.0 or above. Macintosh™ formats should not be used. Each comment should be identified by the applicable N.J.A.C. citation, with the commenter's name and affiliation following the comment.

This rule proposal can be viewed or downloaded from the Department's web site at http://www.state.nj.us/dep.

The agency proposal follows:

Summary

Since the Department has provided a 60-day comment period on this proposal, the proposal is excepted from the rulemaking calendar requirement pursuant to N.J.A.C. 1:30-3.3(a)5.

The Global Warming Response Act, N.J.S.A. 26:2C-37 et seq., requires the Department to adopt rules that establish a greenhouse gas emissions monitoring and reporting program. See N.J.S.A. 26:2C-41. The Act supplements the Air Pollution Control Act, N.J.S.A. 26:2C-1 et seq.

In passing the Global Warming Response Act the Legislature found that "…internationally the issue of global warming has caused alarm, awareness, and action concerning climate changes occurring around the globe attributed to the high level of certain gases called 'greenhouse gases' [which are] gases that increase temperatures in the atmosphere and the risk of catastrophic changes to the Earth's ecosystems and environment…" N.J.S.A. 26:2C-38.

To begin to address these impacts, the Global Warming Response Act requires the Department to establish a greenhouse gas emissions reduction program to limit by 2020 the level of Statewide greenhouse gas emissions to a level that is equal the 1990 level of Statewide greenhouse gas emissions. By 2050, emissions of greenhouse gases are to be reduced to a level that is 80 percent less than the 2006 level of Statewide greenhouse gas emissions. See N.J.S.A. 26:2C-38. To accomplish this mandate, the Department must establish rules through which it will identify all significant sources of Statewide

greenhouse gas emissions, and provide for monitoring and reporting of existing emissions and changes in emissions over time from the sources identified by the Department. The rules must also provide for annual reporting of the levels of emissions and changes in emissions levels, and require monitoring of progress toward the 2020 and the 2050 limits. N.J.S.A. 26:2C-41b.

The Global Warming Response Act defines Statewide greenhouse gas emissions as "the sum of calendar year emissions of greenhouse gases from all sources within the State, and from electricity generated outside the State but consumed in the State, as determined by the Department" in accordance with the Department's rules that establish a greenhouse gas emissions monitoring and reporting program. "Greenhouse gas" is defined as "carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and any other gas or substance determined by the Department to be a significant contributor to the problem of global warming."

The Global Warming Response Act at N.J.S.A. 26:2C-41c mandates that the Department require reporting of greenhouse gas emissions:

- Associated with fossil fuels used in the State, as reported by entities that are manufacturers and distributors of fossil fuels, which may include, but need not be limited to, oil refineries, oil storage facilities, natural gas pipelines, and fuel wholesale and retail distributors;
- From any entity generating electricity in the State and from any entity that generates electricity outside the State that is delivered for end use in the State;

- From any gas public utility as defined in N.J.S.A. 48:3-51; and
- From any additional entities that are significant emitters of greenhouse gases, as determined by the Department, and as appropriate to enable the Department to monitor compliance with progress toward the 2020 limit and the 2050 limit.

The Department proposes to implement the mandates of the Global Warming Protection Act through amendments adding greenhouse gas reporting requirements to the Air Pollution Control rules (Air rules), N.J.A.C. 7:27-21. These substantive requirements would be implemented using the existing reporting mechanisms provided by the Air rules, N.J.A.C. 7:27, and the Worker and Community Right-to-Know rules (RTK rules), N.J.A.C. 7:1G.

Subchapter 21 of the Air rules governs Emission Statements, and applies to any facility that emits or has the potential to emit, directly or indirectly to the outdoor atmosphere, any of the following air contaminants at the reporting thresholds set forth in the rules: volatile organic compounds (VOCs), nitrogen oxides, carbon monoxide, sulfur dioxide, total suspended particulate matter, particulate matter 2.5 and 10, ammonia, and lead. Existing N.J.A.C. 7:1G-3 of the RTK rules requires “employers” to submit to the Department a Community Right to Know (CRTK) Survey for each facility covered by the RTK rules. The proposed new rules and amendments include three new requirements for reporting greenhouse gas information under the Global Warming Response Act: reporting quantities of greenhouse gases released (other than carbon dioxide) on Emission Statements by stationary sources under N.J.A.C. 7:27-21.3; reporting quantities of fossil fuel used on CRTK Surveys by prime suppliers of fossil fuel, gas public utilities,

and natural gas pipeline operators under both N.J.A.C. 7:27-21.11 and N.J.A.C. 7:1G-3.1; and reporting information on greenhouse gases stored (other than carbon dioxide and methane) on CRTK Surveys under both N.J.A.C. 7:27-21.11 and N.J.A.C. 7:1G-3.1.

The Department will use the information submitted under these proposed new rules and amendments to assist it in preparing biennial reports required by the Global Warming Response Act, which reports will summarize the level of greenhouse gas emissions in the State and the progress made toward compliance with the 2020 and the 2050 limits. The Department and other agencies will also use the information to develop strategies, measures and recommendations that will enable the State to achieve the 2020 and 2050 limits.

The Department is also proposing two amendments to N.J.A.C. 7:27-21 that are not related to reporting of greenhouse gas emissions under the Global Warming Response Act. These proposed amendments involve reporting air contaminants at a source operation level in addition to the facility level for fine particulates ($PM_{2.5}$), ammonia (NH_3), and Toxic Air Pollutants (TAPs), and are related to the Federal Consolidated Emissions Reporting Rule (CERR, 67 Fed. Reg. 37602, 40 CFR Part 51), under which the State reports emissions data to the United States Environmental Protection Agency (USEPA).

At an informal stakeholder meeting on May 13, 2008, the Department presented a summary of the draft proposed new rules and amendments to interested parties and provided them with an opportunity to discuss the proposed amendments. Approximately 35 people attended the meeting. The Department considered the input provided during the meeting in developing the proposed new rules and amendments.

Overview of Proposed Rules Relating to Reporting Releases of Greenhouse Gases by Stationary Sources on Emission Statements

The Department proposes to amend N.J.A.C. 7:27-21, Emission Statements, to establish the substantive reporting requirements that will enable the Department to obtain emissions information for greenhouse gases from certain entities, as required under the Global Warming Response Act.

Existing Subchapter 21 of the Air rules classifies regulated facilities into two categories, based upon their potential to emit air contaminants. A higher potential to emit (PTE) facility is one that has a potential to emit 25 tons or more of VOCs per year, or a potential to emit any of the air contaminants listed in existing Table 1 at N.J.A.C. 7:27-21.2 in quantities equal to or greater than the applicable reporting threshold. A lower PTE facility is one that has a potential to emit 10 or more tons of VOCs per year, but less than 25 tons, and a potential to emit each of the other air contaminants listed in existing Table 1 at N.J.A.C. 7:27-21.2 in quantities less than the applicable reporting threshold. In addition to disclosing those air contaminants that it emits in excess of the applicable threshold, and hazardous air pollutants (HAPs), a higher PTE facility must disclose on its Emission Statement its emissions of the greenhouse gases carbon dioxide (CO_2) and methane (CH_4). See N.J.A.C. 7:27-21.3(b)2. A lower PTE facility does not report its greenhouse gas emissions on its annual Emission Statement, but it does report VOCs, oxides of nitrogen (NO_x), carbon monoxide (CO) and HAPs. See existing N.J.A.C. 7:27-21.3(b)1.

The Department proposes to amend N.J.A.C. 7:27-21 to add additional greenhouse gases to those that both higher and lower PTE facilities must report on their annual Emission Statement. The proposed new table contains threshold reporting amounts for those gases. The Department anticipates that the proposed reporting threshold for methane at 100 tons per year will require Emission Statements from facilities that are not required to submit Emission Statements under the existing Air rules, such as landfills and wastewater treatment facilities. Similarly, the proposed thresholds for gases used for refrigeration will require Emission Statements from facilities with refrigeration equipment, such as chillers, retail food refrigeration, cold storage warehouses, and industrial processes. A discussion of the Department's analysis of the facilities subject to Emission Statements under the proposed rules is in the Economic Impact, below.

Overview of Proposed Rules Relating to Reporting of Fossil Fuel Use on CRTK Surveys

The Department proposes reporting requirements at N.J.A.C. 7:27-21.11 and N.J.A.C. 7:1G-3.1 to obtain information on the quantities of fossil fuel used by "greenhouse gas survey reporters" who are prime suppliers of fossil fuel, gas public utilities, and natural gas pipeline operators. The proposed definition of "greenhouse gas survey reporter" incorporates the North American Industry Classification System (NAICS) codes from the definition of "employer" that appears in the RTK rules. These greenhouse gas reporters thus may already be classified as "employers" and subject to reporting requirements under the RTK rules, but may not be required to submit annual

Emission Statements under the Air Pollution Control Act and N.J.A.C. 7:27:21-1.1 et seq. Rather than require those entities not subject to N.J.A.C. 7:27-21 to submit Emission Statements, the Department proposes to collect greenhouse gas emissions information from entities defined as greenhouse gas survey reporters through the reporting mechanism already established under the RTK rules. The Department will collect information about fossil fuels and natural gas sold, to be reported on the CRTK Survey.

The Federal Energy Information Administration (EIA) requires that manufacturers and distributors of fossil fuel, including prime suppliers of fossil fuel, gas public utilities, and natural gas pipeline operators report sales of petroleum products (See EIA-782C Monthly Report of Prime Supplier Sales of Petroleum Products Sold For Local Consumption Instructions, OMB No. 1905-0174, Expiration Date: 12/31/09, Version No. 2007.001). The information that the Department proposes to collect on the use of fossil fuel is consistent with information that these entities currently report to the EIA (See EIA Forms 176, 782C, and 821 required by the Federal Energy Administration Act of 1974, 15 U.S.C. §§ 761 et seq.). The Department will use the information reported on fossil fuel sales to calculate quantities of greenhouse gases released from that fuel, as discussed below in the summary of proposed N.J.A.C. 7:27-21.11.

Proposed N.J.A.C. 7:27-21.11 imposes substantive requirements for greenhouse gas reporting under the RTK rules that are separate and distinct from the existing reporting requirements for employers under the RTK rules at N.J.A.C. 7:1G-3.1. Employers subject to the RTK rules report quantities of Environmental Hazardous Substances (including methane). The amendments to the RTK rules are proposed under

the authority of the Air Pollution Control Act, N.J.S.A. 26:2C-1 et seq., and the Global Warming Response Act.

As discussed above, the Department proposes to take advantage of reporting mechanisms established for employers under the RTK rules to implement reporting of emissions-related data from manufacturers and distributors of fossil fuel, which are specifically identified in the Global Warming Response Act, N.J.S.A. 26:2C-41c. Although the reporting mechanism is through the CRTK Surveys required at N.J.A.C. 7:1G, the information sought to be obtained is related to emissions of air contaminants. Therefore, the Department proposes to amend N.J.A.C. 7:27-21 to add the substantive requirement for reporting. The proposed amendments to the RTK rules at N.J.A.C. 7:1G, which address the procedure by which certain of this information is to be submitted, include a cross reference to these substantive reporting requirements in the Air rules at proposed new N.J.A.C. 7:27-21.11.

Overview of Proposed Rules Related to Reporting Storage of Greenhouse Gases on the CRTK Survey

The Department proposes reporting requirements at N.J.A.C. 7:27-21.11, to be implemented in accordance with the reporting mechanisms established under N.J.A.C. 7:1G-3.1, for greenhouse gas survey reporters that store hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ethers and halogenated ethers, collectively referred to as "greenhouse gases other than carbon dioxide and methane." The Department considers persons who store these gases in quantities equal to or greater than 50 pounds

to be "significant emitters of greenhouse gases" under the Global Warming Response Act. Similar to the reporting for fossil fuel discussed above, the Department proposes using the reporting mechanism of the CRTK Survey to facilitate reporting for these greenhouse gas sources.

The types of facilities subject to this reporting under the Global Warming Response Act are already included in the definition of "employer" subject to the RTK rules at N.J.A.C. 7:1G-1.2, and may be subject to other substantive reporting requirements under those rules. The proposed rules require such a facility to submit emission-related information on the CRTK Survey only if the facility stores a greenhouse gas other than carbon dioxide or methane in quantities equal to or exceeding 50 pounds (meaning the facility falls within the definition of greenhouse gas survey reporter). Conversely, a facility exempt from the Right to Know reporting requirements pursuant to N.J.A.C. 7:1G-3.2 could be required to report greenhouse gases on a CRTK Survey pursuant to the separate requirements of N.J.A.C. 7:27-21.11, if it meets the definition of a greenhouse gas survey reporter.

The threshold of 50 pounds is consistent with the Federal requirements for ozone depleting substances, as discussed in the summary of N.J.A.C. 7:27-21.11 below.

The proposed amendments to the RTK rules at N.J.A.C. 7:1G include a cross reference to the reporting requirements in the Air rules at proposed new N.J.A.C. 7:27-21.11.

Overview of Proposed Emission Statements Rules Unrelated to Reporting Greenhouse Gases

The Department proposes two amendments to N.J.A.C. 7:27-21.5 that are unrelated to reporting of greenhouse gases under the Global Warming Response Act. One proposed amendment focuses on fine particulates ($PM_{2.5}$) and ammonia (NH_3). The amendments for fine particulates and ammonia are necessary to conform the Department's rules to the Federal Consolidated Emissions Reporting Rule (CERR, 67 Fed. Reg. 37602, 40 CFR Part 51), under which the State reports emissions data to the United States Environmental Protection Agency (USEPA). The second proposed amendment focuses on Toxic Air Pollutants (TAPs) listed in Appendix 1, Table 1 of N.J.A.C. 7:27. While not required by the CERR, the Department is proposing this amendment to improve reporting of these chemicals and for consistency with the proposed mandatory changes for fine particulates and ammonia.

A detailed discussion of the proposed new rules and amendments follows.

N.J.A.C. 7:27-21 Emission Statements and Greenhouse Gas Reporting

The Department proposes to expand the title of N.J.A.C. 7:27-21 to include greenhouse gas reporting. As a result of the proposed new rules and amendments, the subchapter will apply not only to Emission Statements, but also to reporting of greenhouse gases on CRTK Surveys.

N.J.A.C. 7:27-21.1 Definitions

At N.J.A.C. 7:27-21.1, the Department proposes definitions of terms used in the new and amended rules. The definitions of "carbon dioxide equivalent" or "CO_2e" and

"global warming potential" are the same as the definition in the Carbon Dioxide Budget Trading Program rules, N.J.A.C. 7:26C-1.2. The definitions are taken from the Model Rule authored by the Regional Greenhouse Gas Initiative, a consortium of 10 Northeast and Mid-Atlantic states, including New Jersey. "Carbon dioxide equivalent" is a consistent and comparable measure for reporting quantities of multiple types of greenhouse gases, and is used to determine, among other things, reporting thresholds for greenhouse gases other than carbon dioxide.

The proposed definitions of "Chemical Abstracts Service Registry Number" or "C.A.S. number" is the same as the definition of the term at N.J.A.C. 7:1G-1.2. The proposed definition is used to help identify the specific greenhouse gases in Table 1B of N.J.A.C. 7:27-21.1.2.

The proposed definition of "Community Right to Know Survey" is similar to the proposed amended definition at N.J.A.C. 7:1G-1.2. In the definition at N.J.A.C. 7:27-21.1, the Department proposes to add a reference to the Worker and Community Right to Know Regulations, N.J.A.C. 7:1G, to provide context for the definition's reference to the Federal Superfund Amendments and Reauthorization Act.

"Global warming potential" or "GWP" is a measure of the radiative efficiency (heat absorbing ability) of a particular gas relative to that of carbon dioxide. It is the ability of the gas to warm the atmosphere, as compared to an equivalent release of carbon dioxide. The global warming potential of a gas can be used to convert releases of the chemical, measured in tons per year, to carbon dioxide equivalents.

The proposed definition of "greenhouse gas" contains the chemicals and chemical categories that the Legislature expressly identified in the Global Warming Response Act (N.J.S.A. 26:2C-39), plus the chemical categories ethers and halogenated ethers. These latter two categories are substances that the Department has determined to be significant contributors to the problem of global warming. Two of the four specifically identified compounds, carbon dioxide and methane, are required to be reported on Emission Statements under the existing Air and RTK rules. The remaining two compounds identified in the statutory definition of "greenhouse gas" (N.J.S.A. 26:2C-39), nitrous oxide and sulfur hexafluoride, will be reported under the proposed amendments. The list of specific gases within the four chemical categories (hydrofluorocarbons, perfluorocarbons, ethers and halogenated ethers) is identified at proposed amended N.J.A.C. 7:27-21.2, Applicability, discussed below.

The proposed definition of "fossil fuel" includes natural gas, petroleum, coal, or any form of solid, liquid, or gaseous fuel derived from such material. Among the fuels derived from fossil fuels are gasoline, distillate oil, fuel oil, diesel fuel, kerosene and propane.

The proposed definition of "gas public utility" is the same as the definition of the term in the Electric Discount and Energy Competition Act at N.J.S.A. 48:3-51. The Global Warming Response Act at N.J.S.A. 26:2C-41c(3) refers to the Electric Discount and Energy Competition Act when it describes a gas public utility.

The proposed definition of "greenhouse gas survey reporter" incorporates a subset of the same persons, corporations and NAICS codes included in the definition of "employer" for purposes of the Right to Know rules, N.J.A.C. 7:1G-1.2. The proposed

rules refer to these persons as "greenhouse gas survey reporters" rather than "employers" because the reporting obligations addressed by these proposed rules arise from the requirements of the Global Warming Response Act rather than the Right to Know Act. Thus, enforcement of the reporting required in N.J.A.C. 7:27-21.11 is under N.J.A.C. 7:27-21.12 and N.J.A.C. 7:27A-3, not N.J.A.C. 7:1G-7. Additionally, confidentiality will be determined based on N.J.A.C. 7:27-1.6 through 1.29, not under N.J.A.C. 7:1G-6.1, Trade Secrets. Reporting exemptions for "employers" in N.J.A.C. 7:1G do not apply to greenhouse gas survey reporters reporting under proposed N.J.A.C. 7:27-21.11.

The proposed definition of "natural gas pipeline operator" is based on the description of NAICS Code 486210, Pipeline Transportation of Natural Gas. The NAICS describes facilities within NAICS code 48621 as "establishments primarily engaged in the pipeline transportation of natural gas from processing plants to local distribution systems."

The proposed definition of "prime supplier of fossil fuel" is based on the description of this term in EIA Form 782C, "Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption." A prime supplier of fossil fuel is a manufacturer or distributor of fossil fuels who produces fossil fuel in New Jersey, or imports, or transports fossil fuels into New Jersey and local marketing areas and sells the fossil fuel to local distributors, local retailers or end users for consumption within New Jersey.

The Department proposes that prime suppliers of fossil fuel report quantities of fuel sold to five different energy consuming sectors, including electricity generation,

transportation, residential, commercial, and industrial. The Department needs quantities reported separately for these sectors to accurately develop an inventory of Statewide greenhouse gas emissions. The Department proposes to include definitions for these sectors to ensure that prime suppliers consistently report information within these sectors. With the exception of the definition of electricity generation sector, these definitions are generally based on the definitions used for reporting to the United States Energy Information Administration (EIA).

The Department proposes a definition of "commercial sector" based on the description of this term on Form 821, "Annual Fuel Oil and Kerosene Sales Report," of the EIA, discussed in the summary of proposed N.J.A.C. 7:27-21.11 below. EIA forms are available at http://www.eia.doe.gov/oss/forms.html. The commercial sector is an energy consuming sector that includes service providing facilities and equipment of non-manufacturing facilities; government entities; and private and public organizations, including, but not limited to religious, social, or fraternal groups and institutional living quarters. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking and running a wide variety of other equipment. The commercial sector can be defined based on NAICS codes 42, 43, 44, 45, and 51 through 72.

The proposed definition of "electricity generation sector" is based on the definition of "electricity generation" at N.J.A.C. 7:27-19, Control and Prohibition of Air Pollution by Oxides of Nitrogen. For consistency, the Department is proposing that the definition at N.J.A.C. 7:27-21.1 include all those facilities engaged in electricity

generation, as defined at N.J.A.C. 7:27-19, because the proposed reporting requirements are intended to cover the same entities.

The proposed definition of "residential sector" is based on the description of that term in EIA Form 821. The residential sector is an energy-consuming sector that consists of living quarters for private households. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a variety of other appliances. Sales to apartment buildings are reported as sales to the commercial sector.

The proposed definition of "transportation sector" is also based on the description of that term in EIA Form 821. The transportation sector is an energy consuming sector that consists of automobiles, trucks, motorcycles, airplanes, trains, boats (marine) and buses.

The proposed definition of "industrial sector" is based on the description of this term in EIA Form 821 "Annual Fuel Oil and Kerosene Sales Report." The industrial sector is an energy consuming sector that consists of all facilities and equipment used for producing, processing, or assembling goods. The industrial sector includes NAICS codes 21 (Mining, Quarrying, and Oil and Gas Extraction), and 31 through 33 (Manufacturing).

The proposed definition of "refrigerant blend" refers to substances that contain, in whole or in part, greenhouse gases that are used for heat transfer purposes, and that provide a cooling effect. The proposed definition of refrigerant blend is intended to include greenhouse gases used in cooling applications, such as air conditioning and refrigeration. Individual greenhouse gases are often used in blends to obtain specific heat

transfer properties for a given application. Refrigerant blends are discussed below in the discussion of N.J.A.C. 7:27-21.2, Applicability.

The proposed amendments to the definition of "reporting year" expand the term to apply to greenhouse gas survey reporters, who must also submit information to the Department under the proposed new and amended rules. The term is used in proposed new N.J.A.C. 7:27-21.11, as well as cross referenced at proposed amended N.J.A.C. 7:1G-5.3.

N.J.A.C. 7:27-21.2 Applicability

The proposed amendments to N.J.A.C. 7:27-21.1(a) recodify existing subsection (a) as paragraph (a)1, and add new paragraph (a)2. Proposed paragraph (a)1 adds a proposed new Table 1B, and amends the existing reference to Table 1, so that it refers to renamed Table 1A. Under proposed N.J.A.C. 7:27-21.1(a)1 the subchapter applies to any facility that emits or has the potential to emit air contaminants listed in Tables 1A and 1B at a rate greater than or equal to the applicable reporting thresholds.

Proposed new N.J.A.C. 7:27-21.2(a)2 extends the subchapter's applicability to each greenhouse gas survey reporter. A greenhouse gas survey reporter will not be required to submit annual Emission Statements merely because it meets the criteria of the proposed amended rule. Rather, in accordance with proposed new N.J.A.C. 7:27-21.11, the greenhouse gas survey reporter will be required to report information on a CRTK survey beyond what is required under the existing RTK rules.

Existing Table 1 is proposed to be renumbered as Table 1A. The Department proposes to add a new table, Table 1B, Air Contaminant Reporting Thresholds for Greenhouse Gases Other than Carbon Dioxide, which identifies the additional greenhouse gases that must be reported under the amended rules. The air contaminants proposed to be included in Table 1B, including a list of specific gases that are proposed to be within the chemical categories in the definition of greenhouse gas, are based on the Fourth Assessment Report: Climate Change 2007 (AR4) of the United Nations Intergovernmental Panel on Climate Change (IPCC) published in 2007 (http://www.ipcc.ch/ipccreports/index.htm). The AR4 report includes reports from three separate Working Groups. Chapter 2 of the Working Group I Report, "The Physical Science Basis," identified gases that contribute to global warming along with their global warming potential (GWP). These gases and GWPs are listed in Table 2.14 of the AR4 report on pages 212 and 213. The gases IPCC included in Table 2.14 are those for which either significant concentrations or large trends in concentrations have been observed or a clear potential for future emissions has been identified.

Many of the greenhouse gases in proposed new Table 1B are used to replace ozone depleting substances primarily used as refrigerants. Due to the negative impacts to the stratospheric ozone layer, the use of ozone depleting substances is being phased out under the Montreal Protocol, an international treaty to which the United States is a party. (See http://ozone.unep.org/.) The Federal requirements implementing the phase out of ozone depleting substances are being implemented under Section 601 through 607 of the Clean Air Act (42 U.S.C. §§7671 through 7671f) and 40 CFR Part 82. Chemicals developed as replacements to ozone depleting substances have high global warming

potentials and contribute significantly to global warming. The Department intends, through the proposed definition of greenhouse gas and proposed Table 1B, to begin tracking the release of these gases into the environment as their use increases over time as the phase out of ozone depleting substances is fully implemented.

The Department is proposing to use global warming potentials based on a 100-year time horizon. This is consistent with most other states and governments that have addressed greenhouse gases and their global warming potentials, including countries who are signatories to the Kyoto Protocol, which also uses a 100- year time horizon for comparing greenhouse gas impacts using GWPs. The various greenhouse gases remain in the atmosphere for differing periods of time. For a variety of reasons, including rate of chemical degradation reactions and uptake by media such as plants and the ocean, some greenhouse gases remain in the atmosphere for long periods, and some are removed relatively quickly. Also, while present in the atmosphere, the different greenhouse gases have differing impacts on the Earth's heat balance. Because the global warming potential of each greenhouse gas changes through time, it is necessary to integrate the effect of a given emission of a greenhouse gas over a period of time in order to compare the global warming effect of that gas with another. Table 2.14 of the IPCC report identifies global warming potentials for the 20 year, 100 year, and 500 year time horizons. The Department has used the 100-year time horizon to calculate the proposed reporting thresholds.

In developing the reporting thresholds set forth in proposed Table 1B, the Department used the greenhouse gas methane as a representative air contaminant. Methane is a greenhouse gas that existing N.J.A.C. 7:27-21 requires be reported. It is

regulated as an air contaminant under N.J.A.C. 7:27-22 and falls within the category of "any other air contaminant" in the definition of "major facility." As discussed below, the thresholds for the other greenhouse gases are based on a release of 100 tons per year of methane, expressed as carbon dioxide equivalents. According to the IPCC AR4 report, methane has a 100-year global warming potential of 25; therefore, if 100 tons per year of methane were released, it would be equivalent to releasing 2,500 tons per year of carbon dioxide (100 tons per year times 25 carbon dioxide equivalents per ton).

The Department developed the reporting thresholds in proposed new Table 1B for the other greenhouse gases that would equal a carbon dioxide equivalent (CO_2e) of 2,500 tons per year by using the global warming potentials of the other greenhouse gases. For example, the calculation for sulfur hexafluoride (SF_6), which has a global warming potential (GWP) of 22,800 is:

(2,500 tons CO_2e / 22,800 GWP of SF_6) * (2000 pounds/ton)

= 219 pounds of SF_6 per year

The result is then rounded up to the next multiple of five, making the reporting threshold for SF_6 220 pounds per year.

The refrigerant blends in proposed Table 1B include designations developed by The American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) (www.ashrae.org) under standard 34-2004. This standard provides an unambiguous system for numbering refrigerants, including blends, and assigning composition-designating prefixes for refrigerants. Other agencies also refer to the ASHRAE designations, including the USEPA in the Significant New Alternatives Policy (SNAP) Program implementing provisions of the phase out of ozone depleting substances

under section 612 of the Clean Air Act (42 U.S.C. § 7671k). The Department has calculated proposed reporting thresholds for existing refrigerant blends that have ASHRAE designations using the global warming potential and the percent of specific greenhouse gases within each blend.

If the calculation of CO_2e equal to 2,500 tons per year for a greenhouse gas other than carbon dioxide is greater than five tons per year, the Department proposes a reporting threshold of the tons per year, rounded up. If the calculation of CO_2e equal to 2,500 tons per year is less than five tons per year, the Department proposes a reporting threshold of pounds per year, rounded up to the next multiple of five. The number is expressed in pounds, in order to avoid expressing the reporting threshold in fractions of tons (for example, 3000 pounds, rather than 1.5 tons). If the calculation of CO_2e equal to 2,500 tons per year is greater than 100 tons per year, the Department proposes a reporting threshold of 100 tons per year. The threshold of 100 tons per year was selected to be consistent with the threshold of 100 tons per year of "any other air contaminant" in the definition of "major facility" in N.J.A.C. 7:27-22 .

The Department does not propose a separate reporting threshold for carbon dioxide on emission statements, because the existing rules and proposed amendments will provide the information on carbon dioxide emissions more efficiently than a separate threshold for carbon dioxide would. Under the Emission Statement rules, facilities whose potential to emit is equal to or exceeds the thresholds of other identified contaminants must report their emissions of carbon dioxide. (N.J.A.C. 7:27-21.3(b)2ii) These facilities, the Department believes, emit most of the carbon dioxide emitted from large stationary sources. An analysis of releases reported in 2006 shows that the 320 major

facilities that reported releases of carbon dioxide accounted for 98 percent of the releases of nitrogen oxides from the 628 facilities in the State that submitted an Emission Statement. The Department believes that those facilities whose potential to emit exceeds the threshold of emissions of identified air contaminants other than carbon dioxide emit the vast majority of the carbon dioxide emitted from stationary sources in the State.

Adding a threshold for carbon dioxide emissions could have the effect of requiring perhaps hundreds of small emitters of carbon dioxide to submit Emission Statements. Greenhouse gas emissions from those small emitters can more efficiently be captured through the reporting requirements that the Department is proposing at new N.J.A.C. 7:27-21.11 that will be implemented by the amendments to N.J.A.C. 7:1G-3, making use of the reporting mechanism of the RTK rules.

N.J.A.C. 7:27-21.3 General Provisions for Emission Statements

The Department proposes to amend the title of N.J.A.C. 7:27-21.3 to reflect that the section is limited to Emission Statements. These general provisions do not apply to the requirements for reporting in the RTK rule format as required at proposed new N.J.A.C. 7:27-21.11.

The Department proposes new N.J.A.C. 7:27-21.3(b)2iv, to require higher PTE facilities to report greenhouse gases other than methane and carbon dioxide if they have the potential to emit any air contaminant identified in Table 1B at or above the applicable threshold. The reporting would begin with the 2009 reporting year. This reporting is in

addition to the reporting of carbon dioxide and methane, required at existing N.J.A.C. 7:27-21.3(b)2ii.

Proposed new N.J.A.C. 7:27-21.3(b)3 requires reporting of greenhouse gases other than carbon dioxide at lower PTE facilities that are not required to report under (b)2. These are facilities that do not have a potential to emit air contaminants identified in Table 1A at or above the applicable threshold, but do have the potential to emit any one of the greenhouse gases in proposed new Table 1B in amounts equal to or above the proposed applicable threshold. The facility would report only those greenhouse gases for which it has the potential to emit at or above the threshold. This proposed reporting requirement is intended to include releases of greenhouse gases other than carbon dioxide from stationary sources that do not combust fossil fuels or other sources of carbon.

The Department proposes to delete N.J.A.C. 7:27-21.3(d). Similar language is proposed at new N.J.A.C. 7:27-21.12, discussed below.

The Department also proposes to update cross references to Table 1A.

N.J.A.C. 7:27-21.5 Required contents of an Emission Statement

The Department proposes to delete N.J.A.C. 7:27-21.5(e)2i. This subparagraph specifies that source operation level information shall not be reported for fine particulates ($PM_{2.5}$) and ammonia (NH_3). In removing this subparagraph the Department is proposing that emissions information for $PM_{2.5}$ and NH_3 be reported at the source operation level in addition to the facility level. The proposed amendments for fine particulates and ammonia are necessary to conform the Department's rules to the Federal Consolidated Emissions Reporting Rule (CERR, 67 Fed. Reg. 37602, 40 CFR Part 51), under which

the State reports emissions data to the USEPA. The Department submits these data to the USEPA, which uses the data to compile the National Emission Inventory (NEI). The NEI is a national database of air emissions information with input from numerous State and local air agencies, from tribes, and from industry. This database contains information on stationary and mobile sources that emit criteria air pollutants and their precursors, as well as hazardous air pollutants (HAPs). The database includes estimates of annual emissions, by source, of air pollutants in each area of the country, on an annual basis. The fine particulate and ammonia data to be collected pursuant to these proposed amendments will also help the Department to characterize significant sources of fine particulates and ammonia, so that effective control measures could be developed and incorporated in the State Implementation Plan (SIP). Once a SIP for fine particulates is in place, the annual fine particulates emissions data that will be collected pursuant to these proposed amendments will help the Department track the State's progress toward achieving the standard.

The Department proposes to renumber subparagraph N.J.A.C. 7:27-21.5(e)2ii as N.J.A.C. 7:27-21.5(e)2i. This renumbering maintains the exception for lower PTE facilities to report only NO_x, VOC, and CO at the source operation level.

The Department proposes new N.J.A.C.7:27-21.5(e)2ii, which requires reporting of the Toxic Air Pollutants (TAPs) listed in Appendix 1, Table 1 of N.J.A.C. 7:27 at a source operation level. The 36 TAPs listed in Appendix 1, Table 1 of N.J.A.C. 7:27 are a subset of the larger HAP list, which includes 188 air contaminants. While not yet required under the USEPA's CERR, source operation level information for TAPs is also reported by the Department to USEPA as part of the NEI. The Department is proposing

this change to improve the reporting of these air contaminants to USEPA. USEPA uses this information to estimate ambient concentrations and related risk in the National Air Toxics Assessment (NATA).

In addition, the Department will use the source operation level data for TAPs to do risk assessment to determine the impacts of these air contaminants on public health. Risk assessment, both facility-wide and community-based, is also necessary to address environmental justice issues, such as past projects the Department has undertaken in the cities and Camden and Paterson. These previous community-based projects have required a tremendous effort to collect, investigate, and estimate emissions because of lack of source operation level release information. The time and effort that goes into community-based risk assessment would be greatly reduced if the information were routinely available in an existing database. This would allow the Department to evaluate risk more efficiently and to take action to reduce high risk.

N.J.A.C. 7:27-21.11 Reporting requirements for greenhouse gas survey reporters

The Department proposes new N.J.A.C. 7:27-21.11 to specify reporting requirements for greenhouse gas reporters that may not be required to submit annual Emission Statements under N.J.A.C. 7:27-21.3. These are facilities that store greenhouse gases other than carbon dioxide and methane, as well as prime suppliers of fossil fuel, gas public utilities, and natural gas pipeline operators. A detailed discussion of the entities likely to be affected by the proposed new rule is in the Economic Impact, below. Rather than collect actual emissions information from these facilities, the Department proposes to collect information about the products stored or sold.

Proposed N.J.A.C. 7:27-21.11(a) requires that the information required to be reported in N.J.A.C. 7:27-21.11 be submitted annually, by March 1 of the year following the reporting year. This is the same schedule as required in the RTK rules at N.J.A.C. 7:1G-5.1. If, for example, a greenhouse gas survey reporter stored a greenhouse gas other than carbon dioxide or methane in quantities equal to or exceeding 50 pounds at one time during a calendar year, on or before March 1 of the following year the greenhouse gas reporter must report the information to the Department. Proposed N.J.A.C. 7:27-21.11(a) also requires that greenhouse gas survey reporters submit a CRTK Survey electronically in accordance with the procedures in proposed new N.J.A.C. 7:1G-5.3(d) through (f), which requires electronic submission unless a hardship exemption is obtained.

If the greenhouse gas survey reporter is also an employer required to submit a CRTK Survey under the RTK rules, the information on greenhouse gases would be submitted to the Department simultaneously with the information required at N.J.A.C. 7:1G-3.1(a) through (d). A greenhouse gas survey reporter who is not required under N.J.A.C. 7:1G-3.1(a) through (d) to submit a CRTK Survey, but is required to submit information in accordance with N.J.A.C. 7:27-21.11, would also report the greenhouse gas information electronically on a CRTK Survey form.

Proposed new N.J.A.C. 7:27-21.11(b) specifies the reporting requirements for three different types of greenhouse gas survey reporters. Proposed new N.J.A.C. 7:27-21.11(b)1 requires greenhouse gas survey reporters that store greenhouse gases other than carbon dioxide or methane to report information on the use and management of these gases. A threshold of 50 pounds is consistent with the Federal requirements for ozone

depleting substances at 40 CFR 82.166, that requires owners/operators of appliances normally containing 50 or more pounds of refrigerant to keep servicing records documenting the date and type of service, as well as the quantity of refrigerant added. Since many of the greenhouse gases proposed to be added will be used to replace these refrigerants, the Department believes a threshold consistent with the existing Federal requirements for ozone depleting substances will provide an efficient transition as the phase out of ozone depleting substances is fully implemented.

The information that must be reported for greenhouse gases other than carbon dioxide and methane is a subset of the information reported for environmental hazardous substances under N.J.A.C. 7:1G-3.1(c). This includes container type, location within the facility, and quantity stored (daily maximum and average daily for the year). The Department will use this information to track the expected increase in use of greenhouse gases other than carbon dioxide and methane as the phase out of ozone depleting substances is implemented.

Proposed new N.J.A.C. 7:27-21.11(b)2 specifies annual reporting requirements for prime suppliers of fossil fuels. Reporting requirements proposed at N.J.A.C. 7:27-21.11(b)2 are similar to those required by EIA Forms 782C and 821, which these prime suppliers submit to the EIA. Under the proposed rule, prime suppliers of fossil fuels report annual quantities of each fossil fuel sold for end use within New Jersey in five energy-consuming sectors.

Fossil fuel distributors must report information on EIA form 821, including the annual quantities of the Kerosene, Distillate Fuel Oil (e.g. Number 2 fuel oil, Number 2 diesel in different sulfur content ranges, Number 4 fuel oil), and Residual Fuel Oil

(Number 5 and 6 fuel oil). Also, fossil fuel distributors classified as prime suppliers of fossil fuel (see discussion of definition above) report information on EIA Form 782C. Information reported on Form 782C includes monthly quantities of the same fossil fuels reported on form 821, plus three additional categories of fuels: reformulated gasoline, conventional gasoline and propane.

The Department is proposing to require similar data that are required to be reported to the EIA, with three clarifications: (1) the reporting requirement is limited to prime suppliers of fossil fuel, (2) the reporting is annual only, and (3) the single annual reporting form includes a combined list of fossil fuels based on those reported on EIA Forms 782C and 821. The Department believes it is necessary to receive this information directly from the prime suppliers of fossil fuel, instead of from the EIA, in order to develop the Statewide greenhouse gas inventory. The Global Warming Response Act specifically mandates that information be reported by fossil fuel manufacturers and distributors. (See N.J.S.A 26:2C-41.) Also, having data submitted directly to the Department will be more timely, allowing the Department to develop Statewide inventories sooner. For example, the EIA released data for calendar year 2005, the most recent year that complete State Energy Data System (SEDS) is available, in February of 2008. The EIA anticipates that calendar year 2006 data will be released in November of 2008. Under the proposed reporting in N.J.A.C. 7:27-21.11(b)2, the Department will receive data for a calendar year in March of the year immediately following, reducing the lag time between submission of information by prime suppliers of fossil fuels and the time the Department has access to the data by approximately 18 months.

The proposed reporting requirements will, for the first time, provide the Department with facility-specific data on quantities of fossil fuels sold by prime suppliers of fossil fuel. Currently, the EIA provides the Department with only aggregate, State-level quantities. The new facility-specific information will allow the Department enhanced ability to review the quality and accuracy of the information. The Department believes this combined information reported by prime suppliers of fossil fuel will provide adequate detail for the Department to prepare its biennial emissions report, reduce the potential for double counting and minimize the reporting burden for the regulated community.

Proposed new N.J.A.C. 7:27-21.11(b)3 specifies annual reporting requirements for gas public utilities and natural gas pipeline operators. The reporting requirements are based on EIA Form 176, Annual Report of Natural and Supplemental Gas Supply and Disposition, and existing reporting to the New Jersey Board of Public Utilities. Under the proposed rule, gas public utilities and natural gas pipeline operators report data on quantities of natural gas sold to customers in five energy consuming sectors and quantities of natural gas consumed within their operations. Gas public utilities and natural gas pipeline operators would also report data on quantities of natural gas throughput at their operations, including total supply (natural gas received as inputs), total disposition (natural gas removed as outputs) and the difference between supply (inputs) and disposition (outputs).

The Department believes the proposed process, with the Department calculating greenhouse gas emissions using data on quantities of fossil fuel sold reported by prime suppliers of fossil fuel and gas public utilities, will be more efficient and effective than

requiring these entities to calculate releases on their own and submit the results to the Department. The proposed process is consistent with the procedure for reporting to the EIA. Prime suppliers of fossil fuel and gas public utilities currently submit data to the EIA on the quantities of fossil fuels sold. The EIA aggregates the reported data on quantities sold in order to estimate State-level quantities. As discussed above, the Department will use the State-level quantities to calculate releases and develop the greenhouse gas emission inventory.

The Department has developed detailed tools and expertise, including available emission factors and quantification protocols, to calculate greenhouse gas releases using information of quantities of fossil fuel sold. If prime suppliers of fossil fuel and gas public utilities were required to perform these calculations on their own, the Department would need to develop technical standards and guidance to help ensure the calculations were performed accurately. Also, the Department would not be able to conduct independent compliance determinations to assess the accuracy of the emission estimates without receiving the underlying data on annual quantities of fossil fuel sold.

The Department's goal in requiring this reporting is to obtain sufficient detail to calculate Statewide releases of greenhouse gases, track trends in releases of greenhouse gases and monitor progress towards the 2020 and 2050 limits established in the Global Warming Response Act. The Department believes this combined information reported by prime suppliers and gas public utilities will provide sufficient adequate detail, reduce the potential for double counting due to multiple reporting of the same fuel as it moves through different steps of the supply chain and provide the data to the State mandated by

the Global Warming Response Act with minimal additional reporting burden for the regulated community.

Existing N.J.A.C. 7:27-21.11, Severability, is proposed to be recodified as N.J.A.C. 7:27-21.13.

N.J.A.C. 7:27-21.12 Enforcement

Under proposed new N.J.A.C. 7:27-21.12, any person who fails to comply with any provision of this subchapter will be subject to civil administrative penalties and applicable criminal penalties. This includes failure to submit an Emission Statement, if required, and failure to report information required at N.J.A.C. 7:27-21.11 on the Community Right to Know Survey.

The proposed rule is similar to existing N.J.A.C. 7:27-21.3(d), proposed to be deleted, which is applicable only to owners or operators of facilities subject to Emission Statements. The proposed new rule is applicable not only to owners or operators of facilities, but also to greenhouse gas survey reporters.

N.J.A.C. 7:1G-1.1 Scope

Proposed new N.J.A.C. 7:1G-1.1(b) expands the scope of the RTK rule to include the use of the Community Right to Know Survey as a vehicle for reporting certain greenhouse gas related information required pursuant to N.J.S.A. 26:1C-1 et seq. and N.J.A.C. 7:27-21.1 et seq.

N.J.A.C. 7:1G-1.2 Definitions

Proposed amendments to the definition of "Community Right to Know Survey" include the use of the Survey as a vehicle for reporting certain greenhouse gas related information required pursuant to N.J.S.A. 26:1C-1 et seq. and N.J.A.C. 7:27-21.1 et seq.

The Department also proposes a definition of "greenhouse gas survey reporter," which is the same as the proposed definition at N.J.A.C. 7:27-21.2. This term is used at proposed amended N.J.A.C. 7:1G-3.1 and 5.3.

N.J.A.C. 7:1G-3.1 Completion of the Community Right to Know Survey Portion of the Environmental Survey

Proposed N.J.A.C 7:27-21.11 requires greenhouse gas survey reporters to report information on fossil fuel and greenhouse gases on a Community Right to Know Survey. Accordingly, the Department is proposing new N.J.A.C. 7:1G-3.1(e) to include a cross reference to the air monitoring rules.

N.J.A.C. 7:1G-5.3 Electronic reporting

Proposed new N.J.A.C. 7:1G-5.3(d) requires any greenhouse gas survey reporter required to report information under N.J.A.C. 7:27-21.11(b) to report electronically on a CRTK Survey. These are the same electronic reporting requirements that at N.J.A.C. 7:1G-5.3(a) are applicable to employers that are required to submit the Release and Pollution Prevention Report (RPPR) under existing N.J.A.C. 7:1G.

If an employer is also a greenhouse gas survey reporter, then the information that the employer must submit in accordance with N.J.A.C. 7:1G-3.1(a) through (d) must also

be submitted electronically to the Department at the same time as the greenhouse gas information required at proposed N.J.A.C. 7:27-21.11. The employer would still submit a copy of the CRTK Survey to the local fire and police departments, local emergency planning committee, and the Right to Know County Lead Agency of the county in which the facility is located, in accordance with N.J.A.C. 7:1G-5.1, and keep a hard copy available for inspection at the facility, in accordance with N.J.A.C. 7:1G-5.1(e). This is consistent with the existing practice for those employers who voluntarily submit their CRTK Surveys electronically to the Department, as discussed in the Reporting of Fossil Fuel Use on CRTK Surveys portion of the Economic Impact, below.

Under existing N.J.A.C. 7:1G-5.3(b) and (c), employers required to submit an RPPR may request approval from the Department to submit the RPPR in paper form instead of electronically, if it is hardship to report electronically. Proposed new N.J.A.C. 7:1G-5.3(e) and (f) will allow greenhouse gas survey reporters that must complete the CRTK Survey electronically as a result of being subject to N.J.A.C. 7:27-21.11 to use the hardship approval process. Employers who are also greenhouse gas survey reporters and, therefore, must submit their CRTK Surveys electronically, may also use the hardship approval process. The Department does not want these employers to submit their EHS information separately from the greenhouse gas information.

Social Impact

The Department anticipates the proposed new rules and amendments will have a positive social impact.

Reporting Releases of Greenhouse Gases by Stationary Sources on Emission Statements

The general public will benefit from the proposed new rules and amendments to N.J.A.C. 7:27-21 implementing the reporting requirements of the Global Warming Response Act for stationary sources on Emission Statements because additional monitoring and reporting of greenhouse gas emissions will be required. This information, and the inventories annually derived from it, will be publicly available and will inform the public on the State's progress in reducing greenhouse gas emissions and progress towards achieving the 2020 and 2050 greenhouse gas emission limits established by the Global Warming Response Act. Past experience has shown that public disclosure of environmental information creates a positive driver for reducing emissions. The Toxic Release Inventory, which requires certain industrial facilities to report quantities of releases and transfers of chemicals, is often cited as a prime example of how public disclosure of environmental data can help lead to reductions in pollution. Reporting under the proposed amendments is expected to have a similar effect, providing incentives for facilities to reduce releases of greenhouse gases.

The proposed amendments will also benefit the public because the information gathered will form the basis for identifying future measures to reduce emissions of greenhouse gases. While not directly requiring implementation of reduction strategies, the proposed rules will require information to be reported to the Department. The Department will use the information to develop policies and strategies to reduce emission of greenhouse gases and the impacts of global warming.

Reporting of Fossil Fuel Use on CRTK Surveys

The proposed new rules and amendments in both N.J.A.C. 7:1G and 7:27-21 pertaining to reporting by prime suppliers of fossil fuels, gas public utilities and natural gas pipeline operators will also have a positive social impact on the general public and the regulated community. These proposed rules require new information to be reported on the State's largest source of greenhouse gas releases -- the burning of fossil fuels. The Department has designed the proposed reporting requirements to be consistent with existing data reported to the Federal Energy Information Administration on the use and sale of fossil fuels, helping to reduce administrative reporting burden.

The Department will use the data submitted by prime suppliers of fossil fuel, gas public utilities and natural gas pipeline operators to calculate estimates of greenhouse gas releases for the Statewide inventory. As with the data submitted by stationary sources of greenhouse gases discussed above, the Statewide inventory data from the burning of fossil fuel will be publicly available, keeping all residents in New Jersey informed on the trends in greenhouse gas releases. The data will help the Department develop effective policies and reduction strategies to reduce releases of greenhouse gases and help reduce the impacts of global warming.

Reporting Storage of Greenhouse Gases on the CRTK Survey

The proposed new rules in both N.J.A.C. 7:1G and 7:27-21 pertaining to reporting information on the storage of greenhouse gases other than carbon dioxide through the reporting mechanism of the CRTK Survey will also have a positive social impact. There are currently no reliable or comprehensive means of tracking the use or release of greenhouse gases other than carbon dioxide and methane. The proposed reporting

requirements will provide needed information on this important group of greenhouse gases. Many of these gases have global warming potentials much higher than carbon dioxide and releases of even small quantities can have a large impact on global warming (see environmental impacts below). Although these gases account for approximately 2.5 percent of the Statewide inventory of all greenhouse gases, releases are expected to increase as facilities convert to the use of these gases as replacements for ozone depleting gases, which are being phased out. By 2020, the release of these gases is projected to account for approximately seven percent of Statewide greenhouse gas releases. Information provided under the proposed new rules and amendments will help the Department track how the phase out of ozone depleting gases is progressing and the expected increases in the greenhouse gases other than carbon dioxide. While not directly used in developing estimates of releases or the Statewide inventory, this information will be used to improve the Department's estimates of releases and to develop effective control strategies to reduce impacts from the release of these gases.

Proposed Amendments to Emission Statements Unrelated to Reporting Greenhouse Gases

The proposed amendments in N.J.A.C. 7:27-21.5 unrelated to the Global Warming Response Act will help the Department meet Federal regulatory obligations and requirements under the Consolidated Emissions Reporting Rule, 40 CFR Part 51 that require reporting of $PM_{2.5}$ and NH_3 at the source operation level. Existing N.J.A.C. 7:27-21 requires reporting only at the facility level.

The proposed requirements for reporting Toxic Air Pollutants at a source operation level will enable to the Department to more accurately assess potential health

risks posed by these air contaminants. The public will benefit from the Department's enhanced ability to assess risks from individual facilities and from multiple facilities within a community.

Economic Impact

The proposed new rules and amendments will have a positive economic impact for the State as a whole, although facilities that are subject to the proposed emissions reporting requirements required under the Global Warming Response Act will bear a small additional cost. Similarly, the proposed amendments for reporting fine particulates, ammonia, and Toxic Air Pollutants at a source operation level will have a slight negative economic impact of facilities subject to the additional reporting.

Reporting Releases of Greenhouse Gases by Stationary Sources on Emission Statements

The proposed amendments to N.J.A.C. 7:27-21 require additional reporting on Emission Statements from facilities that emit greenhouse gases in excess of the reporting threshold at proposed new Table 1B at N.J.A.C. 7:27-21.2(a). To assess the number of facilities affected by the proposed amendments to N.J.A.C. 7:27-21.3(b)3, the Department identified two general categories of gases proposed in Table 1B at N.J.A.C. 7:27-21.2(a) that the Department anticipates will have the biggest impact on subject facilities, and require new reporting. These are halogenated greenhouse gases and methane.

Halogenated Greenhouse Gases

Proposed Table 1B at N.J.A.C. 7:27-21.2(a) includes a list of halogenated greenhouse gases (hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ethers and halogenated ethers). The Department does not have a facility-specific database for these gases to directly assess the number of facilities affected by the proposed rule amendments. To estimate the number of facilities potentially impacted, the Department relied on other sources of data and analysis.

For facilities that submitted an Emission Statement in 2006 the Department reviewed information reported under the RTK rules, N.J.A.C. 7:1G, to determine if these facilities may use and release greenhouse gases other than carbon dioxide. Information focused on whether these facilities reported on-site storage of any of the greenhouse gases listed in Table 1B or any of the ozone depleting substances used in refrigeration equipment that are being phased out and replaced by the gases in Table 1B. Data for reporting year 1993 were used in this analysis, since there was a zero threshold for reporting in 1993 and this would capture additional data and facilities. (A zero threshold means that the facility must report any quantity above zero.)

This review indicates that approximately 105 of the 607 facilities that submitted an Emission Statement in 2006 also reported through the CRTK survey that they stored at least one of the gases listed in Table 1B or an ozone depleting substance, indicating that these facilities may have on-site refrigeration equipment. While it is not possible to know what quantities of greenhouse gases may be released at these facilities, and whether they exceed the proposed reporting thresholds, the Department is able to estimate that approximately 105 facilities may be subject to proposed amended N.J.A.C. 7:27-21, and

may be required to report emissions in addition to those that they report under the existing rules.

The Department's review of available data indicates that both higher potential to emit (PTE) facilities (facilities that report quantities of carbon dioxide and methane released as required by existing N.J.A.C. 7:27-21.3(b)2) and lower PTE facilities (facilities that report quantities of VOC, NO_X, and CO released as required by existing N.J.A.C. 7:27-21.3(b)1) may be impacted by proposed amended N.J.A.C. 7:27-21.3(b). Of the 105 facilities that submitted an Emission Statement in 2006 and that reported storage of either an ozone depleting substance or Table 1B gas, 69 are large facilities that currently report carbon dioxide and methane. Thirty-six are small facilities that currently report only VOCs, NO_X and CO.

It is more difficult to determine if facilities not covered under the existing Emission Statement rules could be subject to the proposed amendments to the Emission Statement requirement. As discussed previously, the Department does not maintain facility-specific data on the non-carbon dioxide greenhouse gases identified in Table 1B at proposed amended N.J.A.C. 7:27-21.2(a), or on the types of facilities that may use these gases. Either of these sets of data could be used to directly estimate facilities that may be impacted by the proposed rules. Instead, the Department must rely on other sources of information to estimate potential release quantities and the numbers of facilities potentially impacted.

Releases of greenhouse gases for the types of refrigeration uses likely to be impacted by the proposed amendments are generally estimated by equipment type and end use in the categories found in Table 1below.

Table 1

Categories of Refrigeration Equipment

Type of equipment	Uses
Chillers	large buildings, offices, hotels, shopping centers
Retail Food Refrigeration	supermarkets, convenience stores, restaurants, food service
Cold Storage Warehouses	warehouses to store meat, produce, dairy products, and other perishable goods
Industrial process	chemical, petrochemical, food processing, pharmaceutical

To determine if a facility using these equipment types could potentially release greenhouse gases in quantities exceeding the reporting thresholds in proposed Table 1B of N.J.A.C. 7:27-21.2(a), the Department estimated potential releases using information on the types and quantities of refrigerants used in this equipment (charge rates) and leak and disposal loss rates. Information on typical charge rates was taken from the USEPA report, Global Mitigation of Non-Carbon Dioxide Greenhouse Gases (EPA Report 430-R-06-005) and information on leak rates was taken from rates used in the USEPAs Vintaging Model which is used to estimate national level release estimates. Results of estimates are presented in Table 2 below for maximum and average release scenarios.

Table 2

Release Estimates for Types of Refrigeration Equipment (tons/yr CO_2e)*

Type of Equipment	Charge MAX kg	Loss Rate MAX. Percent	Charge AVG kg	Loss Rate AVG Percent	GHG Used	GWP	Release MAX Ton/yr CO_2e	Release AVG Ton/yr CO_2e

Chillers	2,000	19.50	1,013	15.25	HFC134a	1,430	613	243
Retail Food Refrigeration	1,800	33.00	903	20	Blend R-404A	3,922	2,562	779
Retail Food Refrigeration	1,800	33.00	903	20	Blend R-507A	3,985	2,604	792
Cold Storage Warehouses	4,000	29.00	4,000	25.5	Blend R-404A	3,922	5,004	4,400
Cold Storage Warehouses	4,000	29.00	4,000	25.5	Blend R-507A	3,985	5,085	4,471
Industrial process	9,100	19.00	4,875	12.5	HFC134a	1,430	2,720	959
Industrial process	9,100	19.00	4,875	12.5	Blend R-404A	3,922	7,458	2,629
Industrial process	9,100	19.00	4,875	12.5	Blend R-507A	3,985	7,579	2,671

* Tons per year carbon dioxide equivalent. Carbon dioxide equivalent is the amount of gas released that equates to a release of 2,500 tons per year of carbon dioxide.

Using maximum charge and leak rates, these release estimates indicate that chillers will likely not exceed the proposed reporting thresholds (2,500 ton/yr CO_2e) unless charge rates and leak rates are above those in Table 2. For retail food refrigeration, only the largest units with the highest leak rates would exceed the proposed thresholds. Other larger equipment such as cold storage warehouses and industrial process refrigeration equipment may exceed the proposed thresholds if charge rates and leak rates are near the average values included in Table 2.

It is more difficult to estimate the number of facilities that could become subject to the proposed amendments based on these releases. To develop a broad estimate, the Department reviewed data compiled by the US Census Bureau for industries that could

potentially have refrigeration types in Table 1 above. For retail food equipment, where only the largest sources with the largest leak rates have the potential to exceed the proposed reporting threshold, the Department considered any establishment in NAICS codes 311, 424, or 445 having 100 or more employees as compiled by the County Business Patterns published by the U. S. Census Bureau (available at http://www.census.gov/epcd/cbp/index.html) to estimate the universe of potential large establishments. These data are summarized in Table 3 below, and indicate that approximately 645 establishments may have refrigeration equipment with large charge rates. Using data submitted under South Coast Air Quality Management District (SCAQMD) rule 1415, Reduction of Refrigerant Emissions from Stationary Refrigeration and Air Conditioning Systems, the California Air Resources Board reported that 11 percent of facilities had leak rates exceeding 35 percent. These data were discussed in a staff presentation May 29, 2008 available at the California Air Resources Board web site (available at http://www.arb.ca.gov/cc/hgwpss/meetings/052908/presentation_stationary_refrigerants_may_29.pdf. Assuming that New Jersey facilities have a similar distribution of leak rates, the Department estimates that between 10 and 15 percent of New Jersey facilities may have leak rates above the maximum rates in Table 2 above. Using these data and assumptions, the Department estimates that between 65 to 97 facilities would have releases above the proposed thresholds.

Table 3

Estimate of Large Retail Food Refrigeration Establishments in New Jersey

NAICS code	NAICS Description	Number of establishments in NJ with 100 or more employees
311	Food Manufacturing	74
424	Nondurable goods merchant wholesalers	225
445	Food & beverage stores	346
	TOTAL	645

For cold storage warehouses, the Department used data from the 2002 Economic Census for NAICS code 49312 for refrigerated warehouses and storage. These data indicate there are 49 establishments in New Jersey that could be classified as cold storage warehouses. Not all of these warehouses use greenhouse gases as refrigerants. Many warehouses use other methods, such as ammonia in secondary loop brine systems. Therefore only a portion of the 49 establishments would be impacted by the proposed rule amendments.

For industrial processes, the Department believes that most of the industrial processes impacted by the proposed rule amendments already report at least one air contaminant on an emission statement and were discussed above.

Methane

Methane is also a greenhouse gas other than carbon dioxide listed in proposed Table 1B at N.J.A.C. 7:27-21.2(a). Facilities that are not subject to reporting under the existing Emission Statement rules will likely be required to report their methane emissions under the proposed rules. Facilities that exceed thresholds for other air

contaminants specified in N.J.A.C. 7:27-21.3(b)2 currently report quantities of methane released. The proposed amendments to N.J.A.C. 7:27-21 establish a new reporting threshold for methane at 100 tons per year that will likely require additional facilities to monitor and report releases of methane, regardless of the quantities of other air contaminants released. Landfills and wastewater treatment facilities are the two categories of facilities that will be most impacted by the proposed amendments.

For landfills, the Department has compiled a comprehensive list of approximately 840 closed and operational landfills in New Jersey. Not all of these landfills are expected to generate significant quantities of methane and be subject to the proposed amendments. To estimate potential methane generation from landfills, the current Statewide inventory identified 89 large landfills. These landfills are separated into three categories based on methane collection and management methods used: 15 landfills that collect methane and use it to generate energy; 17 landfills that collect methane and burn it using a flare; and 67 landfills that are uncontrolled or passively vent methane. In addition, the Department estimates methane generation collectively from approximately 300 smaller landfills. The Department anticipates that most of the 67 landfills that are currently uncontrolled or passively vent methane will become subject to additional reporting under the proposed rule amendments, and that any of the landfills in the first two groups above that do not currently report will become subject to additional reporting, as well. The Department anticipates that a few of the 300 smaller landfills may also become subject to additional reporting.

For wastewater treatment facilities, the quantity of methane generated depends on the type of unit treatment operations used at the plant. In general, anaerobic processes

generate more methane than aerobic processes. For example, anaerobic digestion of treatment plant sludge is known to generate significant quantities of methane. Methods for managing the methane gas at wastewater treatment facilities are generally similar to landfills. The methane gas can be used for energy (either heating or electricity generation), burned in a flare or other control device, or passively vented. Based on information the Department tracks in the New Jersey Environmental Management System (NJEMS) database, the Department estimates there are at least 25 publicly owned treatment plants that digest sludge using anaerobic processes. Depending on the method of gas management employed, these plants, or other plants that use anaerobic digestion, could be impacted by the proposed rule amendments if they emit more that 100 tons per year of methane. Similar to landfills, if passive venting is used it is more likely that the facility will be impacted by the proposed rule amendments.

Methane can also be generated by other wastewater treatment processes other than sludge treatment. To assess other sources of methane generation the Department reviewed Emission Statement data submitted by wastewater treatment facilities in 2006. This review indicated that 11 wastewater treatment facilities that do not use anaerobic methods for sludge treatment reported data to the Emission Statement program. Only four of these facilities reported releases of methane exceeding the proposed 100 tons per year applicability and reporting threshold. Only the largest treatment plants with actual wastewater flows exceeding approximately 20 million gallons per day (MGD) reported emissions of 100 tons per year of methane. The Department publishes annual summaries of municipal wastewater flow from approximately 265 wastewater treatment plants.

These data show that 10 plants had flows exceeding 20 MGD in 2006. All but two of these plants exceeding 20 MGD reported Emission Statements.

Cost of Reporting

To minimize the administrative burden of reporting greenhouse gas emissions on both the Department and the regulated community, the Department is proposing to implement the reporting requirements through existing reporting programs and data systems. Over the past several years the Department has been emphasizing the use of electronic reporting systems to report environmental data.

The majority of facilities that are required under the existing rules to submit Emission Statements, in accordance with N.J.A.C. 7:27-21, have been reporting electronically since 2000 using the Department's Remote Access Data Information User System (RADIUS) software. The Emission Statement rules were amended in 2003 to reflect this. In 2006, the most recent year for complete inventory statistics, all facilities submitted Emission Statements using RADIUS. Implementing the new reporting requirements for greenhouse gas emissions using existing and proven methods will help reduce any added administrative burden.

Economic impacts of the proposed amendments to N.J.A.C. 7:27-21 will be associated with additional emissions monitoring and reporting requirements for subject facilities. For Emission Statement facilities, these additional requirements will include tracking and reporting for greenhouse gases other than carbon dioxide, proposed in Table 1B of N.J.A.C. 27-21.2(a), Air Contaminant Reporting Thresholds for Greenhouse Gases other than Carbon Dioxide.

The Department anticipates that the cost of the proposed rules will be less for facilities that already submit Emission Statements. These facilities are already familiar with electronic reporting to the Department using RADIUS. Also, these facilities are familiar with the tracking and reporting needed to quantify releases of air contaminants. With these systems, resources and experience in place, the additional costs to these facilities should be reduced.

The Department estimates that the additional cost to facilities that currently submit Emission Statements will be approximately $500.00 per year, which is comparable to the cost for reporting other air contaminants under the existing rules. These costs include the costs for tracking and reporting the greenhouse gases other than carbon dioxide proposed in Table 1B at N.J.A.C. 7:27-21.2(a). These costs would primarily be the costs of the manpower for carrying out any additional testing, recordkeeping, and reporting for the gases proposed in Table 1B. This manpower can be provided either by company employees or consultants, as the company chooses.

In general, the additional costs that a facility would incur in complying with the proposed amendments are expected to increase as the number of sources at the facility increases. Factors that would decrease these additional costs include the extent to which the facility already maintains emission records for the additional air contaminants proposed in Table 1B and whether the facility already has in its employ qualified staff available to collect and record the required information. Also, the additional costs incurred in complying with these amendments should diminish to some degree in the subsequent years, once the management systems for recording, maintaining, and compiling the additional emissions information are established.

The Department anticipates that the economic impacts will be higher for facilities that currently do not submit Emission Statements and will become subject to reporting for the first time due to the proposed amendments. Costs for these facilities are expected to include the additional costs for existing reporters discussed above, plus additional costs for establishing tracking and reporting protocols and learning how to submit Emission Statements using the Departments RADIUS reporting software. The Department estimates that the cost to new reporters will be approximately $1,500 per year. In later reporting periods, those costs are expected to decrease somewhat, once tracking and reporting protocols are established, and the facilities are familiar with the RADIUS software.

Reporting of Fossil Fuel Use on CRTK Surveys

Proposed new N.J.A.C. 7:27-21.11 and N.J.A.C. 7:1G require some greenhouse gas survey reporters to report information on the CRTK Survey. These facilities include those defined as prime suppliers of fossil fuel, gas public utilities, and natural gas pipeline operators.

Prime Suppliers of Fossil Fuel

The Department proposes to obtain information from prime suppliers of fossil fuels that are not captured by the existing Emission Statement rules or the RTK Rules. Fossil fuel manufacturers can be identified by NAICS code, as listed in Table 4 below. These NAICS are also included in the definition of employer under the RTK rules.

Table 4

Fossil Fuel Manufacturers and Distributors

NAICS Code	NAICS Description
324110	Petroleum refineries
424710	Petroleum bulk stations and terminals
424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)
454311	Heating Oil Dealers
454312	Liquefied Petroleum Gas (Bottled Gas) Dealers

The Right to Know Act and current RTK rules requires employers that store fossil fuels above threshold quantities are required to report information on daily quantities of fossil fuel stored. The proposed amendments expand these reporting requirements for a certain group of fossil fuel manufacturers and distributors, defined as prime suppliers. The proposed amendments require prime suppliers to report information on annual quantities of fossil fuel sold, in addition to the existing information reported under the RTK rules.

Fossil fuel manufacturers and distributors must also submit data to the EIA concerning annual quantities of fuels sold as required by Section 13(b) of the Federal Energy Administration Act of 1974 (Public Law 93-275). Therefore, to reduce reporting burden the Department proposes to use the data reported to the EIA as the basis for reporting under the Global Warming Response Act. The proposed rules pertaining to reporting by prime suppliers of fossil fuels under the reporting mechanisms of the CRTK Survey will increase the economic burden only marginally for prime suppliers that are subject to the additional emissions reporting requirements. As discussed above, the Department has designed the proposed reporting requirements for prime suppliers of

fossil fuel to reduce reporting burden by aligning these requirements with existing requirements for reporting annual quantities of fuel sold to the Federal EIA. The Department will use these data to calculate facility-level greenhouse gas emissions and develop the emission inventory for Statewide greenhouse gas emissions.

The Department estimates the new reporting requirements for prime suppliers of fossil fuels will impact approximately 50 to 60 entities in New Jersey. The Federal EIA maintains an "Exclusionary List" for prime suppliers that report quantities on the Form 782C. The goal of this list is to identify companies that are prime suppliers. Facilities are instructed to exclude sales to all companies and their subsidiaries represented on this Exclusionary List to avoid double counting. In 2007, this list included approximately 182 companies nationally. To identify the number of prime suppliers in New Jersey potentially affected by these rule amendments, the Department reviewed this list to identify companies operating in the state of New Jersey and other lists such as facilities licensed under the New Jersey Motor Fuels Tax and Terminal Operators identified by the Federal Internal Revenue Service.

The Department believes that all of the entities that are prime suppliers that will be reporting data on fossil fuels are existing reporters under the Worker and Community Right to Know rules at N.J.A.C. 7:1G-3. The Department proposes that prime suppliers submit data the additional on fossil fuels required pursuant to the Global Warming Response Act to the Department using established electronic reporting protocols for the CRTK survey available on the Departments website at http://www.njdeponline.com/. Electronic reporting of CRTK survey data has been available since 2000. In 2006 approximately 50 percent of all companies that submitted a CRTK survey submitted data

electronically. Using existing and proven electronic reporting methods will help reduce the administrative reporting burden for covered facilities. The Department estimates that the cost to existing prime suppliers of fossil fuels will increase approximately $500.00 per year, which is comparable to the cost for reporting other substances on the CRTK survey under the existing rules.

The Department will need to take on added tasks to process fossil fuel data, which will increase the Department's economic burden only marginally. These tasks will include maintaining the electronic data reported by prime suppliers and developing and running protocols to calculate quantities of greenhouse gases released. The Department will use available and generally accepted emission factors and other techniques to calculate greenhouse gas emissions. The Department believes these added tasks can be performed using existing resources.

Gas Public Utilities and Natural Gas Pipeline Operators

Similar to the reporting of fossil fuel by prime suppliers, the proposed amendments include reporting requirements for gas public utilities and natural gas pipeline operators. These proposed reporting requirements include information on annual quantities of natural gas sold, consumed, and released. Gas public utilities are defined in N.J.S.A. 48:3-51, as specified in the Global Warming Response Act. The Department proposes to define natural gas pipeline operator as any person with a NAICS code of 486210 Pipeline transportation of natural gas. The specific reporting requirements are based on existing reporting to the EIA and include annual quantities of natural gas sold to end users in the state of New Jersey.

A review of existing reporting indicates there are four gas public utilities and four natural gas pipeline operators impacted by the proposed reporting. Specifically, reporting requirements included in the proposed amendments are based on EIA Form 176, Annual Report of Natural and Supplemental Gas Supply and Disposition and existing reporting to the New Jersey Board of Public Utilities (BPU). Gas public utilities and natural gas pipeline operators would report data on quantities of natural gas sold to customers in five energy consuming sectors and quantities of natural gas consumed within their operations. The Department estimates that the cost to existing gas public utilities and natural gas pipeline operations will be similar to prime suppliers, and increase approximately $500.00

Reporting Storage of Greenhouse Gases on the CRTK Survey

The proposed amendments also include reporting requirements for greenhouse gas survey reporters that store greenhouse gases other than carbon dioxide and methane listed in Table 1B of N.J.A.C. 7:27-21.2(a) if they are stored in quantities greater than or equal to the proposed 50 pound threshold. The proposed rules would require greenhouse gas survey reporters to report their inventory of these materials, which are primarily used as refrigerants using the reporting mechanisms of the annual CRTK survey. Under the existing RTK rules, employers are required to report information on greenhouse gases only if they are an EHS and are stored in quantities exceeding 500 pounds, or if the are a Federal hazardous chemical and are stored in quantities exceeding 10,000 pounds.

A review of data submitted in 2006 indicates that approximately 30 employers reported information on at least one greenhouse gas other than carbon dioxide based on

the current requirements. A review of data submitted in 1993, when there were no reporting thresholds and employers had to report essentially any quantity of greenhouse gas stored, indicates that approximately 165 employers reported information on at least one greenhouse gas other than carbon dioxide. It is likely that these facilities will be required to report again under the proposed amendments.

Over time, as the phase out of ozone depleting substances is complete, additional employers will likely be covered by the proposed reporting. A review of RTK data reported in 2006 indicates that approximately 465 employers reported information for at least one ozone depleting substance or greenhouse gas other than carbon dioxide. A review of data reported in 1993, indicates that approximately 3,111 employers reported information on at least one ozone depleting substance or greenhouse gas other than carbon dioxide. It is likely that these employers will be required to report again as they switch from ozone depleting substances to greenhouse gases other than carbon dioxide.

The proposed amendments to N.J.A.C. 7:27-21-11 pertaining to reporting information on the storage of greenhouse gases other than carbon dioxide will increase the economic burden only marginally for greenhouse gas survey reporters that would be subject to the additional reporting requirements

Many facilities with refrigeration equipment potentially impacted by the proposed rules (existing reporters and new reporters) must comply with existing Federal reporting and recordkeeping for ozone depleting substances. These Federal requirements at 40 CFR 82.166 apply to owners/operators of appliances normally containing 50 or more pounds of refrigerant. If a facility is familiar with these Federal requirements and has developed the necessary tracking and recording, this would minimize the economic

impact when they switch from ozone depleting refrigerants to greenhouse gases other than carbon dioxide. The Department estimates that the cost to existing greenhouse gas survey reporters with greenhouse gases other than carbon dioxide will increase approximately $500.00 per year, which is comparable to the cost for reporting environmental hazardous substances on the CRTK Survey under the existing rules.

Amendments not related to Greenhouse Gas Reporting under the Global Warming Response Act

The Department is also proposing two amendments to Subchapter 21 of the Air rules that are not related to reporting of greenhouse gas emissions under the Global Warming Response Act. These proposed amendments involve reporting air contaminants at a source operation level in addition to the facility level. One proposed amendment focuses on fine particulates and ammonia. The second proposed amendment focuses on Toxic Air Pollutants (TAPs) listed in Appendix 1, Table 1 of N.J.A.C. 7:27.

For the proposed amendments related to reporting particulates and ammonia at a source operation level, the Department reviewed emission statement data for 2006 to determine the number of facilities that reported these air contaminants. This review indicates that approximately 333 facilities reported either fine particulates or ammonia. These facilities, and any other facility that may have emissions exceeding the reporting thresholds for these contaminants specified in Table 1A at N.J.A.C. 7:27-21.2(a), will have to track and report particulates and ammonia at a source operation level, in addition to the facility level under the proposed rule amendments.

The second of the amendments unrelated to the Global Warming Response Act would require those facilities that are subject to the emissions statement rules to report Toxic Air Pollutants at the source operation level, in addition to the facility level. For the proposed amendments related to reporting Toxic Air Pollutants at a source operation level, the Department reviewed emission statement data for 2006 to determine the number of facilities that reported these contaminants. This review indicates that approximately 283 facilities will have to track and report at least one of the 36 Toxic Air Pollutants listed in Appendix 1, Table 1 N.J.A.C. 7:27-21 at a source operation level, under the proposed rule amendments.

The Department estimates that the additional cost to existing reporters will be approximately $500.00 per year, which is comparable to the cost for reporting other air contaminants at the source operation level under the existing rules.

Environmental Impact

The Department expects the proposed amendments to have a significant and positive environmental impact.

The proposed new rules and amendments include new monitoring and reporting requirements for greenhouse gases other than carbon dioxide. Two new reporting requirements are proposed that will provide information on these gases. Proposed N.J.A.C. 7:27-21.3 requires stationary sources that emit these gases above proposed threshold quantities to annually report quantities released to the environment. Proposed N.J.A.C. 7:27-21.11 and N.J.A.C. 7:1G-3.1 requires greenhouse gas survey reporters

storing these gases in quantities equal to or exceeding 50 pounds at any one time to report information on the storage of these gases.

These gases play an important role in the effort to quantify and address the anthropogenic causes of global climate change. Greenhouse gases other than carbon dioxide are more potent than carbon dioxide (per unit weight) at trapping heat within the atmosphere and, once emitted, can remain in the atmosphere for many years. For example, the hydrofluorocarbons (HFCs) of industrial importance have lifetimes in the range 1.4 to 270 years. In the latest Statewide inventory of greenhouse gases the Department estimates releases of halogenated greenhouse gases, one of the key new categories of greenhouse gases in the proposed rules, will increase from approximately 3.4 million metric tons carbon dioxide equivalent (MMTY CO_2e) in 2004 to approximately 8.6 MMTY CO_2e in 2020, accounting for seven percent of the Statewide inventory. There is currently little to no tracking and public reporting of the release of these important and increasing greenhouse gases. The tracking and reporting in the proposed rules will help close this critical gap.

There are three major groups of greenhouse gases other than carbon dioxide, methane, and nitrous oxide in the definition of greenhouse gases under the Global Warming Response Act: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). (The definition also includes "any other gas or substance determined by the Department of Environmental Protection to be a significant contributor to the problem of global warming.") These compounds are the most potent greenhouse gases because of their large heat-trapping capacity and, in the cases of sulfur hexafluoride and the PFCs, their extremely long atmospheric lifetimes. Because some of these gases,

once emitted, can remain in the atmosphere for centuries, their accumulation is essentially irreversible. Gases with high global warming potential are emitted from a broad range of industrial sources; most of these gases have few, if any, natural sources. The IPCC reported that concentrations of many these gases have increased by large factors (between 4.3 and 1.3) between 1998 and 2005. As of 2005, the overall radiative forcing, a concept used for quantitative comparisons of the strength of different human and natural agents in causing climate change, contributed by these gases was estimated by the IPCC to be 0.017 Watts per square meter, which represents a 69 percent increase between 1998 and 2005. (AR4 report, Table 2.1).

HFCs are manmade chemicals, many of which have been developed as alternatives to ozone depleting substances for industrial, commercial, and consumer products. They are mainly used in refrigeration. The 100-year global warming potentials of HFCs range from 124 (HFC-152a) to 14,800 (HFC-23). The atmospheric lifetime for HFCs varies from just over a year (HFC-152a) to 270 years (HFC-23). Most of the commercially used HFCs have atmospheric lifetimes of less than 15 years (for example, HFC-134a, which is used in automobile air-conditioning and refrigeration, has an atmospheric lifetime of 14 years).

The HFCs with the largest measured atmospheric abundance are (in order) HFC-134a (CF3CH2F), HFC-23 (CHF3), and HFC-152a (CH3CHF2). (AR4, Table 2.1) The only significant emissions of HFCs before 1990 were from HFC-23, which is generated as a by-product during the production of HCFC-22. Between 1998 and 2005 HFC-23 concentrations increased from 14 to 18 parts per trillion (ppt), and these concentrations continue to rise. In 1990, HFCs other than HFC-23 were almost undetectable; in 2005,

global average concentrations of HFC-134a had risen significantly to approximately 35 ppt, with an increase of 27 ppt occurring between 1998 and 2005 (AR4). Concentrations of HFC-134a is expected to continue to rise in line with its increasing use as a refrigerant around the world. HFC-152a has increased at an approximately exponential rate to about 3.9 ppt in 2005, with the effects of increasing emissions being partially offset by atmospheric destruction due to its relatively short lifetime (AR4).

PFCs are also relatively minor substitutes for ozone depleting substances. Over a 100-year period, tetrafluoromethane (PFC-14) and hexafluoroethane (PFC-116) are, respectively, 7,390 and 12,200 times more effective than carbon dioxide at trapping heat in the atmosphere. PFCs have extremely stable molecular structures and are largely immune to the chemical processes in the lower atmosphere that break down most atmospheric pollutants. Not until the PFCs reach the mesosphere, about 60 kilometers above Earth, are they destroyed by very high-energy ultraviolet rays from the Sun. This removal mechanism is extremely slow; as a result, PFCs accumulate in the atmosphere and remain there for several thousand years. The estimated atmospheric lifetimes for PFC-14 and PFC-116 are 50,000 and 10,000 years, respectively. Concentrations of PFC-116 increased over 20 percent between 1998 and 2005 to approximately 2.9 ppt. Concentrations of PFC-14 have been increasing linearly since about 1960 and were approximately 74 ppt in 1997, the last date concentrations were updated (AR4). PFC-14 has both anthropogenic and natural sources (in natural fluorites (CaF2)), with natural sources accounting for approximately half of the current concentration (AR4).

The global warming potential of sulfur hexafluoride is 22,800, making it the most potent greenhouse gas evaluated by IPCC. Sulfur hexafluoride is a colorless, odorless,

nontoxic, nonflammable gas with excellent dielectric properties. It is used for insulation and current interruption in electric power transmission and distribution equipment; to protect molten magnesium from oxidation and potentially violent burning in the magnesium industry; to create circuitry patterns and to clean vapor deposition chambers during manufacture of semiconductors and flat panel displays; and for a variety of smaller uses, including uses as a tracer gas and as a filler for sound-insulated windows.

Like the PFCs, sulfur hexafluoride is very long lived, so all manmade sources contribute directly to its accumulation in the atmosphere. Measurements of sulfur hexafluoride show that its global average concentration increased by about seven percent per year during the 1980s and 1990s, from less than one part per trillion in 1980 to almost four parts per trillion in the late 1990s (IPCC, 2001a). Between 1998 and 2005 concentrations continued to increase to approximately 5.6 parts per trillion. These trends indicate that emissions are approximately constant and with the long lifetime of sulfur hexafluoride that these emissions will continue to accumulate in the atmosphere (AR4).

The Department is adding a fourth category of greenhouse gases, ethers and halogenated ethers, not specifically included in the definition of greenhouse gas under the Global Warming Response Act, that Department considers to be a potential significant contributor to the problem of global warming. In including this category in the definition of greenhouse gas, the Department is relying on the work of the IPCC, which listed this category in the AR4 report. The global warming potential of ethers and halogenated ethers range from 59 (HFE7200) to 14,900 (HFE125). There is little to no information on use or emissions available on this category of gases. The Department believes it is critical to begin to obtain information on this category to fill this gap.

The information submitted pursuant to the rules will be used by the Department to track trends in Statewide emissions of greenhouse gases and develop reduction strategies.

Also, public disclosure of environmental data has been shown to have an incentive effect to reduce releases. It is anticipated that the additional tracking and public disclosure of greenhouse gas releases will lead to enhanced focus on these releases that will encourage those who use and release these gases to reduce these releases.

The proposed rules at N.J.A.C. 7:21.11 and N.J.A.C. 7:1G-3.1 pertaining to reporting by prime suppliers of fossil fuels, gas public utilities, and natural gas pipeline operators are also expected to have a significant and positive environmental impact. The burning of fossils fuels accounts for over 80 percent of Statewide inventory of greenhouse gas releases. New data submitted by prime suppliers of fossil fuels, gas public utilities, and natural gas pipeline operators under the proposed rules will provide additional insight into the energy consuming sectors (electricity generation, transportation, residential, commercial, industrial) that contribute to these releases. These data will help the Department track trends in greenhouse gas emissions and develop policies and reduction strategies.

For the proposed rules pertaining to fine particulates and ammonia, the amendments require reporting of these air contaminants at the source operation level. Source level operation data is required by the Federal CERR rule.

Fine particulates is a class of very fine particulate matter which includes all particulate matter having an aerodynamic diameter less than or equal to a nominal 2.5 microns. Ammonia is a precursor to the formation of fine particulates. USEPA has designated fine particulates as a criteria air pollutant, and has established an annual and

24-hour National Ambient Air Quality Standards (NAAQS). Nonattainment areas for the annual standard have been established and the Department is currently developing revisions to the State Implementation Plan (SIP) outlining how the State will achieve the annual standard as required by the Federal Clean Air Act. For the new 24-hour fine particulates standard, the Department has recommended nonattainment areas in the State and will be developing additional revisions to the SIP in the future to achieve compliance with the standard.

The source operation fine particulates and ammonia data that would be collected pursuant to the proposed rules would help the Department track the State's progress toward achieving the annual standard once the SIP is established. These data would also help provide the data necessary for the development of a baseline emission inventory for new 24-hour standard on which the SIP would be based and help the Department track the State's progress toward achieving the 24-hour standard.

Within the category of toxic air pollutants, the proposed amendments would require the reporting of 36 toxics listed in N.J.A.C. 7:27-21 Appendix 1, Table 1 at the source operation level in addition to the facility level. The source operation level data would be used by the Department to develop the air toxics NEI submittal to USEPA. USEPA uses this information to estimate ambient concentrations and related risk in NATA (National Air Toxics Assessment). Source-specific data is needed to accurately represent the air quality of New Jersey when USEPA models emissions for NATA. USEPA is also using the NEI information in its residual risk program, in which it is required to evaluate risk remaining after Maximum Achievable Control Technology (MACT) implementation. USEPA uses this information to decide whether or not to

tighten the control standards. It is in the State's interest to have this information be as accurate as possible.

The Department will also use source operation level air toxics information to do facility-wide and community-based risk assessment to determine the impact of air toxics on public health. Risk assessment, both facility-wide and community-based, are also necessary to address environmental justice issues, such as the previous community-based air toxics projects in Camden and Paterson. These projects have required a tremendous effort to collect, investigate, and estimate emissions because of lack of information on specific sources at a facility. The time and effort that goes into community wide risk assessment would be greatly reduced if the information were routinely available in an existing database. This would allow the Department to more efficiently evaluate risk, and, if the risk is determined to be unacceptable, provide a basis for developing targeted and effective emission prevention and control strategies.

Federal Standards Statement

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

The portions of the proposed amendments to N.J.A.C. 7:27-21, Emission Statements, that pertain to reporting of emissions of greenhouse gases are not being promulgated under the authority of or in order to implement or comply with any existing program under Federal law, or under a State statute that incorporates or refers to Federal law. Although there is no Federal program, the USEPA is developing a mandatory

greenhouse gas reporting regulation as required by the Consolidated Appropriations Act, 2008, Public Law No: 110-161, which states:

> … not less than $3,500,000 shall be provided for activities to develop and publish a draft rule not later than 9 months after the date of enactment of this Act, and a final rule not later than 18 months after the date of enactment of this Act, to require mandatory reporting of greenhouse gas emissions above appropriate thresholds in all sectors of the economy…

It is not possible at this time to compare the proposed New Jersey requirements to these future Federal requirements.

The proposed amendments to N.J.A.C. 7:21.11 and N.J.A.C. 7:1G-3.1 pertaining to reporting by prime suppliers of fossil fuels, gas public utilities and natural gas pipeline operators are not being promulgated under the authority of or in order to implement or comply with any existing program under Federal law, or under a State statute that incorporates or refers to Federal law. The Department has determined that there are no analogous Federal regulatory requirements. No Federal laws or regulations require that a State mandate that its facilities report information on fossil fuels or natural gas. The Department is proposing these requirements because reporting by manufacturers and distributors of fossil fuels, gas public utilities, and natural gas pipeline operators is specifically mandated by the New Jersey Global Warming Response Act.

Although there is no Federal requirement that a State require facilities to report this information, the Department has chosen to design the reporting requirements mandated by the Global Warming Response Act to be consistent with Federal reporting

to the Energy Information Administration under the Energy Administration Act of 1976 to reduce reporting burden.

The proposed amendments to N.J.A.C. 7:27-21.11 and N.J.A.C. 7:1G-3.1 pertaining to reporting information on storage of greenhouse gases are not being promulgated under the authority of or in order to implement or comply with any existing program under Federal law, or under a State statute that incorporates or refers to Federal law. The Department has determined that there are no analogous Federal regulatory requirements. No Federal laws or regulations require that a State mandate that its facilities report information on storage of greenhouse gases other than carbon dioxide. The Department is proposing the rules based on its determination that the reporting of information on greenhouse gases other than carbon dioxide, which are projected to increase significantly as ozone depleting substances are phased out, is necessary to enable the Department to have sufficient information to determine if the health, safety and welfare of New Jersey citizens is sufficiently protected; to develop well-targeted and cost-effective regulatory programs, and/or to track progress toward meeting environmental goals. A more detailed discussion of the policy reasons for proposing these reporting requirements is provided in the Social and Environmental Impacts above. A discussion of the costs and benefits of the proposal is in the Economic Impact above.

Federal requirements are in place for leak repair and reporting under 40 CFR Part 82 for refrigeration equipment and other appliances. These Federal requirements apply to facilities using ozone depleting gases and substitutes for ozone depleting substances that contain greenhouse gases in appliances normally containing 50 or more pounds of refrigerant. The Federal rules require facilities to, among other things, report on leak

repair activities. However, these Federal rules do not address the reporting of actual releases of greenhouse gases as required by the proposed rules. Activities needed to comply with the Federal requirements are similar to the tracking activities needed to quantify releases of greenhouse gases to enable facilities to report these releases.

The Department has compared the proposed amendments to N.J.A.C. 7:27-21, Emission Statements, to analogous Federal regulatory requirements. It has determined that the proposed amendments to N.J.A.C. 7:27-21 that pertain to reporting of fine particulates and ammonia, a precursor to the formation of fine particulates, are needed in order to comply with the Consolidated Emissions Reporting Rule (CERR) that requires reporting of fine particulates and ammonia at the "point source" level. The term "source operation" as used in N.J.A.C. 7:27-21 is similar to the term "point source" used in the CERR. The CERR rules state, at 40 CFR 51.30(e):

> Point Sources. States must commence reporting point source emissions of $PM_{2.5}$ and NH_3 on June 1, 2004 unless that date is less than 60 days after EPA publishes an approved Information Collection Request (ICR) addressing this section of the rule. If EPA fails to publish an approved ICR 60 days in advance of June 1, 2004, States must commence reporting point source emissions of $PM_{2.5}$ and NH_3 on the next annual or triennial reporting date (as appropriate).

The specific data elements that must be reported for each point source are specified in Table 2A referred to in 40 CFR 50.15(c), Titled "Data Elements that states Must Report for Point Sources." These data elements include stack height, exit gas velocity and other detailed information that the Department collects at the source

operation level. Therefore, the Department must require facilities to report at the source operation level to meet the CERR reporting requirements.

For the portion of the proposed rules pertaining to the reporting of source operation level emissions data for TAPs, the Department has determined that at present there are no analogous Federal regulatory requirements. While the USEPA states in the CERR response to comment document in Section III A that USEPA "plans to develop HAP reporting measures at a future date," no Federal laws or regulations require that a State mandate that its facilities report their actual emissions of TAPs at the source operation level. The Department is proposing these amendments based on its determination that the reporting of actual source operation level toxic air emissions is necessary to enable the Department to have sufficient information to determine if the health, safety and welfare of New Jersey citizens is sufficiently protected; to develop well-targeted and cost-effective regulatory programs, if and as needed; and/or to track progress toward meeting environmental goals. A more detailed discussion of the policy reasons for proposing these reporting requirements is provided in the Social and Environmental Impacts above. A discussion of the costs and benefits of the proposal is in the Economic Impact above.

Jobs Impact

These proposed new rules and amendments are expected to have a very small, but positive, impact on employment and jobs in New Jersey. The modest costs incurred by facilities to comply with the proposed new reporting requirements are not anticipated to affect their operations in such a way as to affect employment, except that there may be a

slight increase at some facilities in the personnel needed to prepare Emission Statements and CRTK Survey. Although most facilities are expected to be able to accommodate the reporting by modifying the job responsibilities of current professional, technical, and clerical personnel, some facilities may elect instead to contract for additional outside professional services.

The additional resources needed for implementing the proposed reporting will be relatively small. Because the facilities that will be affected by the proposed rules are the same facilities that are currently preparing and submitting Emission Statements and CRTK Surveys, which require similar recordkeeping and reporting, the facilities already have recordkeeping and reporting systems in place.

The Department does not anticipate the need to expand its staff to administer and manage this proposed reporting, since almost all of the reporting will be done electronically using the reporting systems already in place.

Agriculture Industry Impact

The Department has evaluated this rulemaking to determine the nature and extent of impact of the proposed rules on the agricultural industry.

The proposed new rules and amendments should have no or negligible impact on the State's agricultural industry. The only farming operations that would potentially be impacted by the proposed gases and reporting thresholds in Table 1B of N.J.A.C.7:27-21.2(a) are those that are engaged in manure handling, which releases methane. The Department does not anticipate that any of these operations will exceed the applicability and reporting thresholds in Table 1B.

The remaining amendments to N.J.A.C. 7:27-21, and the amendments to the RTK rules at N.J.A.C. 7:1G are anticipated to have no impact on the agriculture industry.

Regulatory Flexibility Analysis

As required by the New Jersey Regulatory Flexibility Act, N.J.S.A. 52:14B-16 et seq., the Department has evaluated the reporting, recordkeeping, and other compliance requirements that the proposed new rules and amendments would impose upon small businesses. The Regulatory Flexibility Act defines the term "small business" as "any business which is a resident in this State, independently owned and operated and not dominant in its field, and which employs fewer than 100 full time employees." Based upon this definition, the Department expects that some small businesses will be subjected to the proposed reporting requirements.

Reporting Releases of Greenhouse Gases by Stationary Sources on Emission Statements

To be subject to the proposed amended Emission Statement requirements in N.J.A.C. 7:27-21.3 for reporting releases greenhouse gases at stationary sources, a facility must have a potential to emit one or more air contaminants in quantities which exceed the reporting thresholds given in Table 1B, Air Contaminant Reporting Thresholds for Greenhouse Gases Other than Carbon Dioxide, at N.J.A.C. 7:27-21.2. The Department estimates that most of the higher potential to emit (PTE) facilities are not small business and that a portion of the lower PTE facilities may be small businesses. However, any small business that is subject to the proposed amended Emission Statement

requirements has a relatively large potential to emit air contaminants, and it would not be appropriate, from the perspective of protection of public health and welfare and the environment, to exempt such businesses from the reporting requirements proposed in these amendments.

For affected companies, the Department has determined that the additional costs would be small, estimated in the Economic Impacts section to be $500.00 per year for existing reporters and $1,500.00 per year for new reporters. The additional costs that such a facility would incur would primarily be the costs of the manpower for carrying out any additional testing, recordkeeping, and reporting. This manpower can be provided either by company employees or consultants, as the company chooses. For facilities that currently report Emission Statements it is not expected that the affected facilities would incur additional capital costs, since they would already have the necessary computers and computer systems in place.

The Department anticipates that the proposed new rules and amendments will affect facilities that have not previously submitted Emission Statements to the Department. The Department estimates that these facilities will have slightly higher costs than facilities that have previously submitted Emission Statements. The cost to these facilities is the same as discussed in the Economic Impact, above.

Existing N.J.A.C. 7:27-21 requires electronic reporting, which should simplify the reporting process and make it more efficient. Electronic reporting has been in place since 2000 and the Emission Statement regulations were amended in 2003 to reflect this practice. However, if it is a hardship for a company to report electronically, the proposed amendments do allow the company to obtain an exemption to submit its report on paper.

In addition, the Department also attempts to lessen the burden on affected facilities by providing technical support. The Department holds an annual workshop at which all aspects of the Emission Statement program are reviewed. This workshop is arranged through the Cook College Office of Continuing Professional Education at Rutgers University, New Brunswick, New Jersey. Registration information for this workshop can be accessed at the website http://cook.rutgers.edu/~ocpe. The next Emission Statement workshop will be held prior to May 15, 2009.

The Department also operates a help desk specifically to assist facilities with questions related to the Emission Statement submittal. The Emission Statement help desk can be reached at (609) 984-5483.

Reporting of Fossil Fuel Use on CRTK Surveys

The proposed amendments to N.J.A.C. 7:27-21.11 and N.J.A.C. 7:1G-3.1 pertaining to reporting by prime suppliers of fossil fuels, gas public utilities and natural gas pipeline operators will have a small impact small businesses. For covered businesses there will be expenses associated with the completion of these reporting requirements, including the hiring of consultants or the reassigning of staff from their regular assignments. The costs will be related to the number of fuel types to be reported. Most of the prime suppliers impacted by the proposed reporting are not likely to be small businesses. These prime suppliers gas public utilities and natural gas pipeline operators are existing reporters under the CRTK program and, since the Department is proposing to implement these requirements through the reporting mechanisms of the CRTK Survey, would already have the systems in place to report information on fossil fuels reducing

potential economic impacts. Also, prime suppliers gas public utilities and natural gas pipeline operators already report similar information to the EIA and, therefore, already track the information. Finally, the Department proposes to implement this new reporting using existing and proven electronic reporting protocols, which will help reduce potential economic impacts to facilities subject to the reporting requirements.

Reporting Storage of Greenhouse Gases on the CRTK Survey

The proposed reporting requirements in N.J.A.C. 7:27-21.11 and N.J.A.C. 7:1G-3.1 for greenhouse gas survey reporter storing greenhouse gases other than carbon dioxide and methane are not expected to have a significant impact on small business owners. Tracking and reporting the quantity of greenhouse gases stored using the reporting mechanism of the CRTK Survey may increase the number of substances that must be reported on the CRTK Survey by small greenhouse gas survey reporters entities. It is likely that most of these reporters are also employers who previously reported similar information for ozone depleting substances prior to 1994 when reporting thresholds for these substances were zero. This past experience should help reduce impacts to these reporters.

For covered businesses there will be expenses associated with the completion of these reporting requirements, including the hiring of consultants or the reassigning of staff from their regular assignments. The costs will be related to the number of additional environmental hazardous substances to be reported. In order to minimize the possible costs, the Department will offer free workshops to offer greenhouse gas survey reporters assistance with the added requirements. The Department anticipates that the costs to the

greenhouse gas survey reporters will also be minimized because compliance with the requirements will be accomplished through an existing reporting program, rather than the establishment of an entirely new reporting mechanism.

In order for the proposed rules to serve their intended purpose of collecting information to assist in the State's understanding of the releases or storage of greenhouse gases in the State, it is essential that these reporting mechanisms are established. The Department has balanced the need to protect the public health and the environment against the economic impact of these rules on small businesses in order to arrive at the proposed reporting system.

Amendments not related to Greenhouse Gas Reporting under the Global Warming Response Act

The proposed amendments to N.J.A.C. 7:27-21 unrelated to reporting of greenhouse gases under the Global Warming Response Act require the owner or operators of facilities to report fine particulates, ammonia and toxic air pollutants at a source operation level in addition to the facility level. While it is likely that source operation level data are tracked already in order to develop facility level data, this would possibly entail additional testing, and certainly entail additional recordkeeping keeping and annual compilation of emissions data, which would be entered into the Emission Statement submitted for the facility. Since this proposed amendment will impact only facilities that currently report Emission Statements it is not expected that the affected facilities would incur additional capital costs, since they would already have the necessary computers and computer systems in place.

Smart Growth Impact

Executive Order Number 4 (2002) requires State agencies that adopt, amend or repeal any rule to include in the rulemaking document a Smart Growth Impact Statement that describes the impacts of the proposed rule on the achievement of smart growth and the implementation of the State Development and Redevelopment Plan (State Plan). The Department has evaluated the proposed new rules and amendments to determine the impact they would have on smart growth and the implementation of the State Plan. The Department has determined that the proposed new rules and amendments will have no impact on smart growth or implementation of the State Plan.

Since the proposed amendments will provide additional public information on air pollution and encourage protection of air quality, the proposed new rules and amendments support the conservation and environmental protection goals and policies underlying the State Plan.

Housing Affordability Impact Analysis

Pursuant to N.J.S.A. 52:14B-4, as amended effective July 17, 2008, by P.L. 2008, c. 46, the Department has evaluated the proposed new rules and amendments to determine their impact, if any, on the affordability of housing. The Department has determined that the proposed rules will have no impact because it is extremely unlikely that the rules will evoke a change in the average costs associated with housing.

The proposed rules, in part, establish reporting requirements for facilities and greenhouse gas survey reporters that use, store or release greenhouse gases and fossil

fuels. While these materials are used in cooling, air conditioning and heating systems within single family and other residential housing establishments, no reporting requirements are imposed for the residential sector. Any costs associated with reporting by facilities or greenhouse gas survey reporters are not expected to impact the residential sector.

Smart Growth Development Impact Analysis

Pursuant to N.J.S.A. 52:14B-4, as amended effective July 17, 2008, by P.L. 2008, c. 46, the Department has evaluated the proposed new rules and amendments to determine their impact, if any, on smart growth development. The proposed rules establish reporting requirements for facilities and greenhouse gas survey reporters that use, store or release greenhouse gases and fossil fuels, and do not impact residential housing. Therefore, the rules will not evoke a change in housing production in Planning areas 1 or 2, or within designated centers.

The portion of the proposed rules that require reporting of $PM_{2.5}$ and ammonia releases at a source operation level in addition to the facility level also do not impact residential housing and therefore will not evoke a change in housing production in Planning areas 1 or 2, or within designated centers.

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

N.J.A.C. 7:1G WORKER AND COMMUNITY RIGHT TO KNOW

N.J.A.C. 7:1G-1.1 Scope

(a) (No change.)

(b) This chapter also addresses the use of the Community Right to Know Survey for the reporting of certain greenhouse gas information for purposes of the Global Warming Response Act, N.J.S.A. 26:1C-1 et seq., in accordance with N.J.A.C. 7:27-21.

N.J.A.C. 7:1G-1.2 Definitions

"Community Right to Know Survey" means the reporting form which combines the chemical inventory reporting requirements of the Environmental Survey, formerly part I, and the Superfund Amendments and Reauthorization Act, Section 312. **It also includes the reporting requirements for certain greenhouse gas information for purposes of the Global Warming Response Act, N.J.S.A. 26:2C-41, and pursuant to N.J.A.C. 7:27-21.**

…

"Greenhouse gas survey reporter" means any person who stores any greenhouse gas other than carbon dioxide or methane in quantities greater than or equal to 50 pounds, or who is a prime supplier of fossil fuel, a gas public utility, or a natural gas pipeline operator, as those terms are defined at N.J.A.C. 7:27-21.1, and who is engaged in business operations having one or more of the United States North American Industry Classification System (NAICS) codes listed in the definition of

"employer" in this section, subject to the specified exceptions and/or limitations in the definition.

N.J.A.C. 7:1G -3.1 Completion of Community Right to Know Survey Portion of the Environmental Survey

(a) – (d) (No change.)

(e) A greenhouse gas survey reporter that is subject to the greenhouse gas reporting requirements of N.J.A.C. 7:27-21.11 shall submit on a Community Right to Know Survey the information required at N.J.A.C. 7:27-21.11(b).

N.J.A.C. 7:1G - 5.3 Electronic reporting

(a) – (c) (No change.)

(d) Any greenhouse gas survey reporter required to submit the Community Right to Know Survey pursuant to N.J.A.C. 7:27-21.11 shall submit the Community Right to Know Survey electronically using the Department's on-line reporting website located at www.nj/gov/dep/online/.

1. If a greenhouse gas survey reporter is also an employer required to submit a Community Right to Know Survey under N.J.A.C. 7:1G-3.1(a) through (d), the information required to be transmitted to the Department pursuant to N.J.A.C. 7:1G-5.1(a) and (b) shall also be

transmitted electronically, at the same time as the information required at N.J.A.C. 7:27-21.11, and subject to (e) and (f) below.

(e) If it is a hardship for a greenhouse gas survey reporter to submit a Community Right to Know Survey electronically, the greenhouse gas survey reporter may request approval from the Department to submit the Community Right to Know Survey in paper form. The Department shall approve such a request provided that:

1. The request is submitted no later than March 1 following the reporting year, as defined at N.J.A.C. 7:27-21.1;

2. The greenhouse gas survey reporter explains:

i. The grounds for the hardship that electronic submittal would impose; and

ii. The effort(s) the greenhouse gas survey reporter will make to ensure its ability to make electronic submittals in the future; and

3. The greenhouse gas survey reporter makes every effort to become able to submit the form electronically in future years.

(f) The Department shall approve, on a case-by-case basis, an extension of a reporting deadline if a greenhouse gas survey reporter is unable to electronically file its Community Right to Know Survey due to a malfunction in the Department's electronic reporting system. The Department shall not approve any extension due to a malfunction in a greenhouse gas survey reporter's electronic information technology system, unless the greenhouse gas survey reporter verifies the malfunction in writing and promptly files the report by other means.

N.J.A.C. 7:27 AIR POLLUTION CONTROL

N.J.A.C. 7:27-21. Emissions Statements **and Greenhouse Gas Reporting**

N.J.A.C. 7:27-21.1 Definitions

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

…

"Carbon dioxide equivalent" or "CO_2e" means the quantity of a given greenhouse gas multiplied by its global warming potential.

...

"Chemical Abstracts Service Registry number" or "C.A.S. number" means the unique identification number assigned by the Chemical Abstracts Service to chemicals.

…

"Commercial sector" means an energy-consuming sector that consists of service-providing facilities and equipment of non-manufacturing businesses; Federal, State, and local governments; and other private and public organizations, including, but not limited to religious, social, or fraternal groups and institutional living quarters. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking and running a wide variety of other equipment.

…

"Community Right to Know Survey" means the reporting form for purposes of the Worker and Community Right to Know Regulations, N.J.A.C. 7:1G, that combines the chemical inventory reporting requirements of the Environmental Survey, formerly part I, and the Superfund Amendments and Reauthorization Act, Section 312. It also includes the reporting requirements for certain greenhouse gas information for purposes of the Global Warming Response Act, N.J.S.A. 26:2C-41, and pursuant to this subchapter.

…

"Electricity generation sector" means an energy consuming sector that consists of facilities possessing combustion or steam generating sources used for generating electricity that deliver all or part of their power to the electric power distribution grid for commercial sale.

…

"Fossil fuel" means natural gas, petroleum, coal, or any form of solid, liquid, or gaseous fuel derived from such material.

…

"Gas public utility" means a public utility, as that term is defined in the Department of Public Utilities Act of 1948, N.J.S.A. 48:2-13, that distributes gas to end users within this State;

...

"Global warming potential" or "GWP" means a measure of the radiative efficiency (heat absorbing ability) of a particular gas relative to that of carbon dioxide (CO_2)

after taking into account the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of CO_2.

…

"Greenhouse gas" means CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride and ethers and halogenated ethers that are listed in Table 1B of N.J.A.C. 7:27-21.2(a).

…

"Greenhouse gas survey reporter" means any person that stores any greenhouse gas other than carbon dioxide or methane in quantities greater than or equal to 50 pounds, or that is a prime supplier of fossil fuel, a gas public utility, or a natural gas pipeline operator, and who is engaged in business operations having one or more of the United States North American Industry Classification System (NAICS) codes listed in the definition of "employer" at N.J.A.C. 7:1G-1.2, subject to the specified exceptions and/or limitations in the definition.

"Industrial sector" means an energy-consuming sector that consists of all facilities and equipment used for producing, processing, or assembling goods. The industrial sector encompasses operations including, but not limited to, manufacturing and mining.

…

"Natural gas pipeline operator" means a person primarily engaged in the pipeline transportation of natural gas from processing plants to local distribution systems.

…

"Prime supplier of fossil fuel" means a person who is a manufacturer or distributor of fossil fuels that produces fossil fuel in New Jersey, or imports or transports fossil fuels into New Jersey and local marketing areas, and sells the product to local distributors, retailers, or end-users in New Jersey.

…

"Refrigerant blend" means any substance that is used for heat transfer purposes and provides a cooling effect, and that consists of, in part, a greenhouse gas.

…

"Reporting year" means**, as to an Emission Statement,** the calendar year during which emissions reported in an Emission Statement were emitted, except that carbon monoxide emissions emitted in December of the preceding calendar year shall also be reported as part of the peak carbon monoxide season emissions in a given year. **As to a greenhouse gas survey reporter, "reporting year" means the calendar year during which the greenhouse gas survey reporter stored a greenhouse gas other than carbon dioxide or methane in quantities equal to or exceeding 50 pounds at one time, sold fossil fuel (if a prime supplier of fossil fuel), or sold natural gas in New Jersey (if a gas public utility or natural gas pipeline operator).**

"Residential sector" means an energy-consuming sector that consists of living quarters for private households. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a variety of other appliances. Sales to apartment buildings shall be reported as sales to "commercial sector."

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…

"Transportation sector" means an energy consuming sector that consists of automobiles, trucks, motorcycles, airplanes, trains, boats (marine) and buses.

N.J.A.C. 7:27-21.2 Applicability

(a) This subchapter applies to**:**

1. [a]**A** facility if the facility emits or has the potential to emit, directly or indirectly to the outdoor atmosphere, any air contaminant listed in Table**s** 1**A and 1B** below at a rate greater than or equal to the applicable reporting threshold given in Table**s** 1**A** and **1B; and**

2. Each greenhouse gas survey reporter.

TABLE 1**A**
AIR CONTAMINANT REPORTING THRESHOLDS
(No change to table.)

TABLE 1B
AIR CONTAMINANT REPORTING THRESHOLDS FOR GREENHOUSE GASES OTHER THAN CARBON DIOXIDE

Gas	CAS	GWP - 100 years	Reporting Threshold (Tons per Year)	Reporting Threshold (Pounds per Year
Methane	**74828**	**25**	**100**	
Nitrous oxide	**10024972**	**298**	**8**	

Nitrogen trifluoride	**7783542**	**17,200**	**-**	**295**
trifluoromethylsulphur pentafluoride	**373808**	**17,700**	**-**	**285**
Sulfur hexafluoride	**2551624**	**22,800**	**-**	**220**
Hydrofluorocarbons				
HFC-23	**75467**	**14,800**	**-**	**340**
HFC-32	**75105**	**675**	**-**	**7,410**
HFC-125	**354336**	**3,500**	**-**	**1,430**
HFC-134a	**811972**	**1,430**		**3,500**
HFC-143a	**420462**	**4,470**	**-**	**1,120**
HFC-152a	**75376**	**124**	**20**	
HFC-227ea	**431890**	**3,220**	**-**	**1,555**
HFC-236fa	**690391**	**9,810**	**-**	**510**
HFC-245fa	**460731**	**1,030**	**-**	**4,855**
HFC-365mfc	**406586**	**794**	**-**	**6,300**
HFC-43-10mee		**1,640**	**-**	**3,050**
Perfluorocarbons				
PFC-14	**75730**	**7,390**	**-**	**680**
PFC-116	**76164**	**12,200**	**-**	**410**
PFC-218	**76197**	**8,830**	**-**	**570**
PFC-318	**115253**	**10,300**	**-**	**485**
PFC-3-1-10	**355259**	**8,860**	**-**	**565**

PFC-4-1-12	**678262**	**9,160**	**-**	**550**
PFC-5-1-14	**355420**	**9,300**	**-**	**540**
PFC-9-1-18	**306945**	**7,500**	**-**	**670**
Ethers and Halogenated Ethers				
HFE-125	**3822682**	**14,900**	**-**	**340**
HFE-134	**1691174**	**6,320**	**-**	**795**
HFE-143a	**421147**	**756**	**-**	**6,615**
HCFE-235da2	**26675467**	**350**	**7**	
HFE-245cb2		**708**	**-**	**7,065**
HFE-245fa2	**1885489**	**659**	**-**	**7,590**
HFE-254cb2	**425887**	**359**	**7**	
HFE-347mcc3		**575**	**-**	**8,700**
HFE-347pcf2	**406780**	**580**	**-**	**8,625**
HFE-356pcc3		**110**	**23**	
HFE-449sl (HFE-7100)	**163702-07-6 or 163702-08-7**	**297**	**8**	**16,835**
HFE-569sf2 (HFE-7200)	**163702054**	**59**	**42**	
HFE-43-10pccc124 (H-Galden 1040x)		**1,870**	**-**	**2,675**
HFE-236ca12 (HG-		**2,800**	**-**	**1,790**

10)			
HFE-338pcc13 (HG-			
01)	**1,500**	-	**3,335**
Perfluoropolyethers			
PFPMIE	**10,300**	-	**485**
Refrigerant blends			
R-401A	**16**	**100**	-
R-401B	**14**	**100**	-
R-401C	**19**	**100**	-
R-402A	**2,100**	-	**2,385**
R-402-B	**1,330**	-	**3,760**
R-403-A	**1,766**	-	**2,835**
R-403-B	**3,444**	-	**1,455**
R-404A	**3,922**	-	**1,275**
R-405A	**4,386**	-	**1,140**
R-407A	**2,107**	-	**2,375**
R-407B	**2,804**	-	**1,785**
R-407C	**1,514**	-	**3,305**
R-407D	**1,627**	-	**3,075**
R-407E	**1,552**	-	**3,225**
R-410A	**2,088**	-	**2,395**

R-410B	**2,229**	**-**	**2,245**
R-411A	**14**	**100**	**-**
R-411B	**4**	**100**	**-**
R-412A	**442**	**6**	**-**
R-413A	**2,053**	**-**	**2,435**
R-415A	**22**	**100**	**-**
R-415B	**93**	**27**	**-**
R-416A	**844**	**-**	**5,930**
R-417A	**2,346**	**-**	**2,135**
R-418A	**3**	**100**	**-**
R-419A	**2,967**	**-**	**1,685**
R-420A	**1,258**	**-**	**3,975**
R-421A	**2,631**	**-**	**1,905**
R-421B	**3,190**	**-**	**1,570**
R-422A	**3,143**	**-**	**1,595**
R-422B	**2,526**	**-**	**1,980**
R-422C	**3,085**	**-**	**1,625**
R-422D	**2,729**	**-**	**1,835**
R-423A	**2,280**	**-**	**2,195**
R-424A	**2,440**	**-**	**2,050**
R-425A	**1,505**	**-**	**3,325**
R-426A	**1,508**	**-**	**3,315**

R-427A	**2,138**	**-**	**2,340**
R-428A	**3,607**	**-**	**1,390**
R-429A	**12**	**100**	**-**
R-430A	**94**	**27**	**-**
R-431A	**36**	**70**	**-**
R-434A	**3,245**	**-**	**1,545**
R-500	**32**	**77**	**-**
R-503	**5,935**	**-**	**845**
R-504	**325**	**8**	**-**
R-507A	**3,985**	**-**	**1,255**
R-508A	**12,360**	**-**	**405**
R-509A	**4,945**	**-**	**1,015**

(b) – (d) (No change.)

N.J.A.C. 7:27-21.3 General Provisions **for Emission Statements**

(a) (No change.)

(b) An Emission Statement shall include the information required under N.J.A.C. 7:27-21.5 and shall include emission information for the following air contaminants:

1. If the facility's potential to emit VOC is less than 25 tons per year and if the facility's potential to emit each of the other air contaminants listed in Table 1**A** at N.J.A.C. 7:27-21.2 is less than the applicable reporting threshold set forth in Table 1**A** such that the facility is subject to Emission Statement requirements only

because its potential to emit VOC is equal to or greater than 10 tons per year, emission information shall be reported only for:

i. The following three Table 1**A** air contaminants: VOC, NO_x and CO; and

ii. (No change.)

2. If the facility's potential to emit VOC is equal to or greater than 25 tons per year or if the facility's potential to emit any other air contaminants listed in Table 1**A** at N.J.A.C. 7:27-21.2 is equal to or greater than the reporting threshold, emission information shall be reported for the following:

i. Each of the air contaminants listed in Table 1**A** at N.J.A.C. 7:27-21.2, except that the reporting of emission information for $PM_{2.5}$ and NH_3 shall not begin until the Emission Statement for reporting year 2003;

ii. Beginning with the Emission Statement for reporting year 2003 and for each year thereafter, the greenhouse gases CO_2 and CH_4;[and]

iii. Beginning with the Emission Statement for reporting year 2003 and for each year thereafter, each of the toxic air pollutants which are listed in N.J.A.C. 7:27-21, Appendix 1, Table 1 and for which the facility has a potential to emit that is equal to or greater than the applicable reporting threshold listed in N.J.A.C. 7:27-8, Appendix 1, Table B, Reporting and SOTA Thresholds for HAPs[.]**; and**

iv. Beginning with the Emission Statement for reporting year 2009, and for each year thereafter, greenhouse gases other than carbon dioxide and methane, if they are released in quantities equal to or greater than the reporting thresholds in N.J.A.C. 7:27-21.2, Table 1B.

3. If the facility's potential to emit greenhouse gases is equal to or greater than the reporting thresholds in N.J.A.C. 7:27-21.2, Table 1B, and the facility is not required to report under (b)2 above, the facility shall report emissions for each greenhouse gas which it has the potential to emit in quantities equal to or above the applicable reporting threshold.

(c) (No change.)

(d) [The owner or operator of a facility subject this subchapter is responsible for ensuring compliance with all requirements of this subchapter. An owner or operator who fails to submit an Emissions Statement that is required under this subchapter, submits an Emission Statement with incomplete information, or otherwise fails to comply with any provision of this subchapter shall be subject to civil penalties in accordance with N.J.A.C. 7:27A-3 and applicable criminal penalties, including, but not limited to, those set forth at N.J.A.C. 7:26-C-19(f). If there is more than one person who is an owner or operator of a facility, each such person shall be jointly and severally liable for such civil and criminal penalties.] (**Reserved.)**

(e) – (h) (No change.)

N.J.A.C. 7:27-21.5 Required contents of an Emission Statement

(a) – (d) (No change.)

(e) An Emission Statement shall include facility-wide emission information and emission information at the source operation level as follows:

1. (No change.)

2. Emission information shall be given at the source operation level for**:**

i. [a]**A**ll of the air contaminants listed in Table 1**A** at N.J.A.C. 7:27-21.2 except that[:

i. Source operation level information shall not be reported for $PM_{2.5}$ and NH_3; and

ii. I]**i**f the facility's potential to emit VOC is less than 25 tons per year and if the facility's potential to emit each of the other air contaminants listed in Table 1**A** is less than the applicable reporting threshold set forth in Table 1**A**, source operation level emission information shall be given only for NO_x, VOC, and CO[.]**; and**

ii. Each of the toxic air pollutants listed in N.J.A.C. 7:27-21, Appendix 1, Table 1, and for which the facility has a potential to emit that is equal to or greater than the applicable reporting threshold at N.J.A.C. 7:27-8, Appendix 1, Table B, Reporting and SOTA Thresholds for HAPs.

N.J.A.C. 7:27-21.11. Reporting Requirements for greenhouse gas survey reporters

(a) A greenhouse gas survey reporter shall submit a Community Right to Know Survey containing the information identified in (b) below to the Department on or before March 1 of the year following the reporting year. The Community Right to Know Survey required under this section shall be transmitted to the Department electronically, as provided in N.J.A.C. 7:1G-5.3(d) through (f).

1. If the greenhouse gas survey reporter is an employer as defined at N.J.A.C. 7:1G-1.2 who is required to submit a Community Right to Know Survey under N.J.A.C. 7:1G-3.1(a) through (d), the information in (b) below shall be submitted at the same time as the information required at N.J.A.C. 7:1G-3.1(a) through (d).

(b) Each greenhouse gas survey reporter shall submit to the Department in accordance with (a) above the following information:

1. Each person who stores a greenhouse gas other than carbon dioxide or methane in quantities equal to or exceeding 50 pounds at one time shall submit for each greenhouse gas the following information:

i. The name and Chemical Abstracts Service registry number, if available, of each greenhouse gas other than carbon dioxide or methane which is present at the facility;

ii. For reporting, greenhouse gases other than carbon dioxide or methane shall be grouped according to container type and location within the facility;

iii. The quantity of each greenhouse gas other than carbon dioxide or methane, in pounds, in terms of daily maximum and average daily amount; and

iv. The major methods of storage, including container type, temperature, pressure conditions, and locations shall be reported including the number of days the greenhouse gas other than carbon dioxide or methane was present onsite during the calendar year at the facility.

2. Each prime supplier of fossil fuels shall submit the following information concerning the annual quantities of fossil fuel during the reporting period on the applicable portion of Community Right to Know Survey:

i. Each fossil fuel that the prime supplier sold in New Jersey;

ii. The total annual quantity, in gallons, of each fossil fuel sold by the prime supplier in New Jersey;

iii. The annual quantity, in gallons, of each fossil fuel sold by the prime supplier in New Jersey for use in each of the following energy consuming sectors:

(1) Electricity generation sector;

(2) Transportation sector;

(3) Residential sector;

(4) Commercial sector; and

(5) Industrial sector.

3. Each gas public utility and each natural gas pipeline operator shall submit to the Department the following information:

i. Heat content of natural gas sold in New Jersey;

ii. Annual quantity of natural gas sold in New Jersey during the reporting period to end consumers owned by the gas public utility or natural gas pipeline operator, reported in thousand cubic feet at 14.73 pounds per square inch absolute and 60 degrees Fahrenheit;

iii. Annual quantities sold in New Jersey during the reporting period to end consumers not owned by the gas public utility or natural gas pipeline operator, reported in thousand cubic feet at 14.73 pounds per square inch absolute and 60 degrees Fahrenheit;

iv. Annual quantities sold in New Jersey during the reporting period, reported in thousand cubic feet at 14.73 pounds per square inch absolute and 60 degrees Fahrenheit, for use in the following energy consuming sectors:

(1) Electricity generation sector;

(2) Transportation sector;

(3) Residential sector;

(4) Commercial sector; and

(5) Industrial sector.

v. Annual quantities of natural gas consumed in the gas public utility or natural gas pipeline operator's operations, including:

(1) Pipeline or storage compressor use;

(2) New pipeline fill; and

(3) Pipeline distribution use.

vi. Annual losses of natural gas from leaks or accidents;

vii. Total supply of natural gas in New Jersey during the reporting period;

viii. Total disposition of natural gas during the reporting period; and

ix. The difference between total supply and total disposition.

N.J.A.C. 7:27-21.12 Enforcement

Any person who fails to comply with any provision of this subchapter shall be subject to civil administrative penalties in accordance with N.J.A.C. 7:27A-3 and applicable criminal penalties including, but not limited to, those set forth at N.J.S.A. 16:2C-19(f). Each person who is the owner or operator of a facility or who is a greenhouse gas survey reporter at a facility shall be jointly and severally liable for such civil administrative and criminal penalties.

Recodify existing N.J.A.C. 7:27-11 as N.J.A.C. 7:27-13 (No change in text.)