APPENDIX A7

1.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY (RACT) ANALYSIS

This appendix provides an analysis of potential control measures for major point source categories in order to determine whether or not any of these measures could be considered a reasonably available control technology (RACT) for the annual Fine Particulate Matter ($PM_{2.5}$) National Ambient Air Quality Standard (NAAQS).

This appendix includes 1) a discussion of the $PM_{2.5}$ RACT requirements, 2) a discussion of New Jersey's public process to date, 3) New Jersey's $PM_{2.5}$ RACT analysis and 4) New Jersey's $PM_{2.5}$ RACT commitments. While this RACT analysis focused on control measures that reduce direct $PM_{2.5}$ and SO_2 (a $PM_{2.5}$ precursor) emissions for annual $PM_{2.5}$ attainment, reductions in regional haze, transported emissions, PM-related air toxics, and 24-hour $PM_{2.5}$ levels will also result from the implementation of the RACT measures identified by this analysis.

1.1 $PM_{2.5}$ RACT Requirements

42 U.S.C. §7502(c)(1) (Section 172(c)(1) of the Clean Air Act) requires states with nonattainment areas to submit State Implementation Plans (SIPs) implementing emission controls that are economically and technologically feasible. Specifically, Section 172(c)(1) of the Clean Air Act states:

> "In general – such plan provisions shall provide for the implementation of all reasonably available control measures as expeditiously as practicable (***including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology***) (emphasis added).

Emissions control technologies that meet these criteria for major stationary sources are known as Reasonably Available Control Technology or "RACT."

On April 25, 2007, the USEPA issued the Clean Air Fine Particle Implementation Rule.[1] This final rule provides guidance on the Clean Air Act requirements for State and Tribal plans to implement the annual $PM_{2.5}$ NAAQS, including guidelines for making RACT determinations in nonattainment areas.

The $PM_{2.5}$ Implementation Rule establishes a combined approach to RACT and RACM, where the RACT analysis is simply a part of the overall RACM analysis, defining them as those measures that a state finds are both reasonably available and contribute to attainment as expeditiously as practical in the specific nonattainment area. Since the final determinant of RACM is that measures, either alone or in combination, can advance the

[1] 72 Fed. Reg. 20586; April 25, 2007

attainment date by one year in order to require implementation, this combined RACM/RACT approach would apply that criterion to RACT measures. This is contrary to the USEPA's RACT approach under Subpart 2 of the Clean Air Act for ozone, where RACT is required as a separate analysis from RACM, and does not consider advancing the attainment date a criterion for required implementation. New Jersey believes that the approach taken for ozone is the correct interpretation of the Clean Air Act requirements for RACT, and has therefore chosen to complete its $PM_{2.5}$ RACT analysis separate and apart from its RACM analysis, and without consideration of advancing the attainment date. New Jersey's $PM_{2.5}$ RACM analysis is included in Appendix A8 of this SIP document.

In establishing RACT, states must address direct emissions of $PM_{2.5}$, and the precursors to $PM_{2.5}$ formation, (SO_2 and NO_x), from sources contributing to downwind $PM_{2.5}$ nonattainment areas, as well as local sources in a nonattainment area. The USEPA has designated specific nonattainment areas. New Jersey intends to apply its $PM_{2.5}$ measures throughout New Jersey, in the 13 counties that are designated nonattainment, as well as the remaining eight counties that may contribute to nonattainment. The USEPA chose not to classify the degree of nonattainment for $PM_{2.5}$ as it has in the past for ozone and PM_{10} nonattainment designations. Consequently, the Final Rule provides no corresponding emissions thresholds to ensure that states with more severe $PM_{2.5}$ nonattainment designations are subject to stricter RACT requirements for attainment. The NJDEP believes that the "no classification" option[2] selected by the USEPA for implementing RACT fails to meet the standards of the Clean Air Act and could negatively impact the ability of nonattainment areas to meet the $PM_{2.5}$ NAAQS by providing "potential exemptions for large sources of particulate matter that could impact the attainment status of the area in which they are located, as well as impact the ability of downwind areas to make progress towards attainment."[3]

The Clean Air Act requires States with nonattainment areas to implement RACT on existing major sources, but provides no specific list defining specific stationary sources of direct $PM_{2.5}$ emissions and precursor emissions, or "major" cutoff thresholds of the potential to emit from these sources, that must be evaluated.[4] Table A1 shows a comparison of various RACT thresholds, as well as cutoffs from other control programs for facilities and equipment, in order to inform its decision process.

Table A1. Major Source/Equipment Thresholds (tons per year)

Criteria Pollutant	**Regional Haze/ BART**	**PM_{10} RACT**	**1-hour Ozone RACT**	**8-hour Ozone RACT**	**$PM_{2.5}$ RACT**	**$PM_{2.5}$ RACT – NJ Comments**	**Sub 18 Significant Increases**	**PSD**	**SOTA**
	CAA/USEPA					NJ			
$PM_{2.5}$	--	N/A	--	--	None	10-25/5	--	--	--
PM_{10}	15	70*	--	--	N/A	N/A	15	15	5
NO_x	40	70*	25/10	100**	None	25-50/10	25	40	5

[2] 72 Fed. Reg. 20611; April 25, 2007
[3] 70 Fed. Reg. 65984; November 1, 2005
[4] 72 Fed. Reg. 20620; April 25, 2007

SO_2	40	70*	--	--	None	25-50/10	40	40	5

Notes: *Major source cutoff threshold for PM_{10} and its precursors for serious nonattainment areas from CAA, Subpart 4 of Part D, "Additional Provisions for Particulate Matter Nonattainment Areas."

**In New Jersey, major thresholds for 1-hr ozone continue to apply for 8-hr ozone to prevent backsliding.

The NJDEP established RACT thresholds at 25 tons per year at the facility level for each $PM_{2.5}$ pollutant. This is lower than the 70 tons per year established in subpart 4 for PM_{10} to capture major sources of $PM_{2.5}$, a subset of PM_{10}. This ensures a thorough evaluation of the full range of contributing stationary sources in New Jersey and prevents backsliding. Next the NJDEP evaluated $PM_{2.5}$ emissions at the equipment level down to 5 tons per year. New Jersey requires that new and modified equipment with greater than five tons per year criteria pollutant emissions incorporate advances in the art of air pollution control, referred to as "state-of-the-art" (SOTA) requirement. In the Regulatory Impact Analysis, the USEPA determined that sources emitting less than 5 tons per year "were likely to have existing controls in place, and further control was typically not cost-effective and inefficient in reducing area-wide concentrations of PM."[5] The NJDEP chose to set an equipment level threshold of 10 tons per year for each attainment plan pollutant as the cutoff for existing equipment in its RACT analysis. The 25/10 thresholds coincide with the cutoff levels initially chosen by the NJDEP in our preliminary evaluation of NO_x, VOC, SO_2, and $PM_{2.5}$ control measures, which began in early 2005, with the intention of integrating the 8-hour ozone, fine particle and regional haze SIP requirements to achieve concurrent benefits.

1.2 Public Process

Starting in 2005, the NJDEP began its effort to identify promising source categories with the potential for significant emission reductions of NO_x, VOC, SO_2, and $PM_{2.5}$ to reduce ozone, fine particles and regional haze. The NJDEP hosted a public workshop entitled, "*Reducing Air Pollution Together*" and established pertinent workgroups, participated in the development of regional control measures, and conducted its own preliminary RACT assessments. The recommendations from these three venues were consolidated and presented to the NJDEP's Air Quality Management team for their consideration. The Air Quality Management team then discussed and prioritized the recommendations resulting in a list of approximately 60 potential control measures for further evaluation.

Using the same template as the Ozone Transport Commission's control measure worksheets, the NJDEP staff wrote white papers addressing the recommendations from the air quality workgroups, regional and local perspectives that were determined to be the most promising by the NJDEP. These white papers were used in deciding the strategies to include in the 8-hour ozone, $PM_{2.5}$ and regional haze SIPs. The white papers relevant to this $PM_{2.5}$ RACT analysis are listed in Table A2.

[5] U.S.EPA 2006. Regulatory Impact Analysis for the Particulate Matter National Ambient Air Quality Standards. Air Benefits and Costs Group, Office of air Quality Planning and Standards, Research Triangle Park, NC, October 6, 2006.

Table A2. List of White Papers Relevant to $PM_{2.5}$ Control Measures

SCS003	ICI Boilers
SCS004A	Process Heaters & Boilers in a Petroleum Refinery
SCS004B	Flares in a Petroleum Refinery
SCS004C	Fluid Catalytic Cracking Unit (FCCU) in a Petroleum Refinery
SCS006A	Coal Fired EGU Boilers
SCS006B	No. 6 Fuel Oil-Fired EGU Boilers
SCS007	Glass/Fiberglass Furnaces
SCS008	Asphalt Production Plants
SCS009	Municipal Waste Combustors (MWCs) (Incinerators)
DI014	Control Measures for Stationary Diesel Engines
HR001	Regional Sulfur Fuel Oil Controls

The white papers were made available to the public for their review and comment. Based on comments received, other information obtained by the NJDEP, or regional control strategy development efforts, several of the white papers were revised. The white papers are available on the NJDEP's website at www.nj.gov/dep/airworkgroups/docs/wp_summary_table_web.xls. More detailed evaluations were done subsequent to the white papers in order to develop this SIP and the rules which implement the SIP.

The NJDEP met with industry representatives to acquire input on the source categories selected for rule development. Control measures under consideration for meeting the $PM_{2.5}$ NAAQS emission sources may also be affected by the NJDEP's rule proposals to lower the levels of ozone and regional haze. Strategies are being coordinated to the extent reasonable to help affected stakeholders in planning their retrofit, or add-on, controls to meet the more specific provisions of those strategies. This outreach effort on reducing or controlling air pollutants helped determine reasonable measures to improve air quality and public health, and achieve federal health and visibility standards. The NJDEP will continue to reach out to all interested parties, including industry and environmental organizations, when it develops rule strategies to address the problems of air pollution most effectively.

1.2.1 "Reducing Air Pollution Together" Initiative

The NJDEP commenced a collaborative effort to discuss the air quality challenges facing New Jersey by hosting a public workshop on Wednesday, June 29, 2005, at the Trenton War Memorial Building, Trenton, New Jersey. This workshop served to initiate a dialogue between the NJDEP and interested and affected parties about reducing emissions in order to improve air quality in New Jersey. As a result of the *Reducing Air Pollution Together* workshop, six air quality workgroups were formed and collaborated over several months to develop recommendations on how to reduce air emissions from their specific source categories, including stationary sources, area sources and mobile sources, both on road and off road. The workgroups were tasked with identifying

reasonable and effective control measures that impact any of the four ozone, fine particle and regional haze precursors: VOC, NO_x, SO_2, and direct $PM_{2.5}$. See Chapter 4 for more details regarding the workshop.

Through the cooperative efforts of the NJDEP, federal agencies, industry, consultants, environmental groups, and other members of the regulated community, the workgroups evaluated available emission inventories, technical information and field data to develop a list of potential air emission control strategies. The workgroups identified the most promising areas where further evaluation of emission reduction opportunities should be focused for possible inclusion in the SIP revisions addressing 8-hour ozone, fine particles and regional haze. The criteria used by the workgroups to prioritize control measures included technical feasibility, economic feasibility, environmental benefits, and implementation feasibility.

The air quality workgroups compiled their recommendations into reports that are available at http://www.nj.gov/dep/airworkgroups/index.html. The Diesel Initiatives (DI) and Stationary Combustion Sources (SCS) workgroups addressed the stationary source categories and available control measures pertinent to this $PM_{2.5}$ RACT evaluation. The following table summarizes the stationary source categories, available control measure(s) and the effected air pollutant(s) highly recommended by the DI and SCS workgroups as promising control strategies.

Source Category	Available Control Measure	Effected Air Pollutant(s)			
		$PM_{2.5}$	SO_2	NO_x	VOC
Diesel Initiatives Workgroup					
Stationary diesel engines	Federal New Source Performance Standards	X	X	X	X
Generators	Ultra low sulfur diesel		X		
Stationary Combustion Sources Workgroup					
Fuel-oil combustion sources	Lower sulfur content of fuel oil	*	X		
No. 6 fuel oil combustion sources	Fuel switching to lower sulfur fuel content	*	X		

* cobenefit

The workgroup processes were an early stage in the development of the SIP revisions. The NJDEP held a follow-up workshop on Wednesday, May 17, 2006, to provide an update on efforts during the preceding year to address air quality challenges facing New Jersey and to share preliminary regulatory and nonregulatory plans to reduce air emissions. The public provided feedback on the workshop, and on the 60 white papers drafted by the NJDEP and discussed at the workshop, through an online survey and/or directly contacting the NJDEP by email or mail. Comments received on the white papers are posted at www.nj.gov/dep/airworkgroups/comments.html. Many Workgroup members continued to be active in developing and commenting on both the draft emission control measures and the ongoing SIP revisions.

1.2.2 Regional Actions

The Department worked with the other jurisdictions in the Ozone Transport Commission (OTC), the Mid-Atlantic Regional Air Management Association (MARAMA), Mid-Atlantic/Northeast Visibility Union (MANE-VU), and Northeast States for Coordinated Air Use Management (NESCAUM) to identify reasonable control measures which could be implemented regionally, yielding greater air quality benefits for nonattainment areas and providing industry a level playing field with consistent requirements.

Mid-Atlantic/Northeast Visibility Union (MANE-VU)

The states of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) signed a statement[6] on June 20, 2007, that outlines long-term strategies to reduce and prevent regional haze. The MANE-VU states, including New Jersey, plan on lowering the sulfur content in fuel oil, implementing Best Available Retrofit Technology requirements of the Regional Haze Rule and reducing emissons from electric generating units (EGUs) and industrial, commercial and institutional (ICI) boilers, as part of these long-term strategies. New Jersey intends to implement these long-term, regional strategies to improve visibility as well as attain the new, more stringent, 24-hour fine particle and 8-hour ozone NAAQS. These strategies also reduce annual $PM_{2.5}$ emissions. For more information about the MANE-VU Statement of Principles, please see Chapter 4, Control Measures and Appendix B5.

Ozone Transport Commission (OTC)

New Jersey worked concurrently with other jurisdictions in the Ozone Transport Region (OTR) to explore reasonable control measures for potentially significant reductions to attain the 8-hour ozone and $PM_{2.5}$ NAAQS and to achieve regional haze goals. The Ozone Transport Commission (OTC) staff and member jurisdictions formed workgroups to review mobile, point and area sources, identify candidate source categories; and consider potential control strategies to reduce NO_x, VOC, $PM_{2.5}$, and SO_2 emissions.

The workgroup that focused on major stationary point sources compiled a list of candidate control measures from sources published by the USEPA and various regional associations, OTC member state-specific control strategies already in place, and emission control initiatives from states outside the Ozone Transport Region, such as California. Then using 2002 emission inventories as the base year, the workgroups determined projected 2009 emission reductions, based on currently mandated controls including Federal rules, adoption of OTC model rules by member jurisdictions, enforcement settlements, and other state-specific control measures. For most categories, control measure worksheets summarizing key facts about the relevant control alternatives were developed by the OTC workgroup and posted on the OTC website for stakeholder comments.

[6] Statement of the MANE-VU Concerning a Course of Action within MANE-VU toward Assuring Reasonable Progress, June 20, 2007.

Based on the assessment of the OTC workgroup, and input from various industry groups, the OTC selected control measures for source categories and the pollutants, primarily NO_x and VOC, which would be most effective in reducing ozone levels throughout the Ozone Transport Region. The State of New Jersey and other OTC member jurisdictions have resolved to pursue necessary and appropriate rulemakings to implement the emission reduction percentages, emission rates or technologies for asphalt paving, asphalt production plants, glass furnaces, and Industrial, Commercial and Institutional (ICI) boilers. Guidelines are found in OTC Resolution 06-02, adopted on June 7, 2006, and amended on November 15, 2006. The suggested compliance date for these guidelines is January 1, 2009, or as soon as practicable thereafter.[7]

Reductions of NO_x, and to a lesser degree, VOC, will also result in reductions to fine particles and regional haze. In addition to NO_x, the OTC initiatives for ICI boilers address reductions of sulfur dioxide (SO_2) emissions. (See Chapter 4 for information regarding the MANE-VU regional fuel strategy.) Others, such as glass furnace measures, will have SO_2 and $PM_{2.5}$ cobenefits, as well as NO_x reductions. For more information about the OTC control measure identification process, or the control measures identified for implementation through this process, please see Chapter 4, Control Measures and Appendix B3.

Mid-Atlantic Regional Air Management Association (MARAMA)

The MARAMA states sought to identify and analyze emissions from certain refinery operations to help member states with petroleum refineries in developing their SIPs for ozone, fine particles and regional haze. MARAMA determined from this study that there is the potential for additional emission reductions from the following sources: 1) fluid catalytic cracking units, 2) flares and 3) equipment leaks.

Subsequently, MARAMA drafted a technical report and three multipollutant model rules to (a) codify and perpetuate the requirements of consent decrees, and (b) provide more stringent requirements where practicable for these three refinery processes. MARAMA posted these documents on their website for input from stakeholders, environmental groups, and the general public, and also held a conference call to give stakeholders an opportunity to ask questions about the report and model rules. The NJDEP also sent letters to environmental groups in New Jersey informing them of the availability of the model rules and the supporting technical report posted on MARAMA's website. This letter was sent to the environmental commissions of Westville, Perth Amboy, Linden, and Paulsboro as well.

MARAMA posted its Final Report, "Assessment of Control Technology Options for Petroleum Refineries in the Mid-Atlantic Region," and the three model rules in January 2007. The Model Rules for Fluidized Catalytic Cracking Units and Petroleum Refinery Flares, in particular, benefit reduction of fine particles by addressing PM, SO_2 and NO_x. For more information about the MARAMA control measure identification process, or the control measures identified for implementation through this process, please see Chapter 4, Control Measures, and Appendix B4.

[7] Ozone Transport Commission Resolution 06-02

1.2.3 8-Hour Ozone RACT State Implementation Plan Revision

The source categories and affected emission units discussed in the 8-hour Ozone RACT SIP revision represent the most reasonable emissions control strategies identified through the internal, regional and public efforts to improve air quality, most notably ozone. The air contaminants most important in the formation of ozone are oxides of nitrogen (NO_x) and volatile organic compounds (VOC). Reductions of these pollutants, particularly NO_x, also result in reductions to fine particles and regional haze. Hence, some of the 8-hour ozone RACT measures from New Jersey's ozone SIP will also reduce emissions of sulfur dioxide (SO_2) and direct fine particles ($PM_{2.5}$). Therefore, the 8-hour ozone RACT analysis also addressed in part $PM_{2.5}$ RACT requirements and the Regional Haze Rule Best Available Retrofit Technology (BART) requirement.

The NJDEP held a public hearing on the 8-hour ozone RACT SIP revision proposal in Trenton, New Jersey on March 19, 2007. No oral testimony was given at the hearing, but written comments were received from the following parties: PSEG, Connecticut Department of Environmental Protection, Conectiv Energy, ConocoPhillips – Bayway Refinery, and Valero – Paulsboro Refinery. The comment period closed on March 26, 2007. The NJDEP finalized its RACT SIP for 8-hour ozone on August 1, 2007.[8]

Table A3 lists the selected source categories and the targeted pollutants that were discussed in New Jersey's 8-Hour Ozone RACT SIP and/or in New Jersey's rule making process, which will not only reduce precursors to ozone, but will also reduce precursors to $PM_{2.5}$ and regional haze as well.

[8] NJDEP. Reasonably Available Control Technology (RACT) for the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS) and other Associated State Implementation Plan (SIP) Revisions for the Fine Particulate Matter National Ambient Air Quality Standard (NAAQS), Regional Haze, and the Clean Air Act Requirements on Transport of Air Pollution. New Jersey Department of Environmental Protection. August 1, 2007.

Table A3. New Jersey Ozone RACT

Candidate Source Categories	Targeted Pollutants				Affected Rules
	NO_x	VOC	SO_2	$PM_{2.5}$	
8-hour Ozone RACT					
Asphalt used for paving (emulsified and cutback)		X			N.J.A.C. 7:27-16.19[1]
Asphalt pavement production plants	X				N.J.A.C. 7:27-19.9[1]
Glass manufacturing furnaces	X		4	4	N.J.A.C. 7:27-19.2, 19.10[1]
Adhesives and sealants		X			N.J.A.C. 7:27-26[2]
Industrial/commercial/institutional boilers	X				N.J.A.C. 7:27-19.7[1]
Oil and Gas Fired Electric generating units (EGUs)	X				N.J.A.C. 7:27-19.4[1]
High Electric Demand Day (HEDD) units	X				N.J.A.C. 7:27-19.4, 19.5, 19.29[1]
Coal-fired boilers serving EGUs	X		X	X	N.J.A.C. 7:27-4, 10 & 19.4[1]
VOC stationary storage tanks		X			N.J.A.C. 7:27-16.2[1]
Case by Case, Facility-specific emission limit and alternate emission limit	X	X			N.J.A.C. 7:27-16.17 & 19.13[1]
2006 Control Techniques Guidelines		X			N.J.A.C. 7:27-16.7[1]
Municipal solid waste combusters (incinerators) NOx rule	X				N.J.A.C. 7:27-19.12[1]
Sewage sludge incinerators	X				N.J.A.C. 7:27-19.28[1]

Notes: 1. Proposed on August 4, 2008
2. Adopted on October 30, 2008
3. Replacing fossil fuel with oxygen, as in oxy-fuel firing, reduces NO_x emissions while providing SO_2 and $PM_{2.5}$ cobenefits.

1.3 $PM_{2.5}$ RACT Assessment

As discussed in Section 1.2 (Public Process) section, the NJDEP actively sought input in developing revisions to the SIP for 8-hour ozone, fine particulates and regional haze. A RACT analysis focusing on the ozone precursors (NO_x and VOC) is included in a separate document that was finalized on August 1, 2007.[9] New Jersey's nonattainment areas for $PM_{2.5}$ are also nonattainment for 8-hour ozone. Since NO_x is considered an attainment plan precursor for $PM_{2.5}$ as well as ozone, the 8-hour ozone RACT analysis

[9] Reasonably Available Control Technology (RACT) for the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS) and other Associated State Implementation Plan (SIP) Revisions for the Fine Particulate Matter National Ambient Air Quality Standard (NAAQS), Regional Haze, and the Clean Air Act Requirements on Transport of Air Pollution. New Jersey Department of Environmental Protection. August 1, 2007.

was proposed for the $PM_{2.5}$ RACT requirement as well. In addition, any control measures presented in the 8-hour ozone RACT SIP that have co-benefits for $PM_{2.5}$ precursors will in part address the $PM_{2.5}$ RACT requirement. Although the USEPA does not consider VOC as a $PM_{2.5}$ precursor for SIP and conformity purposes, there will be some $PM_{2.5}$ benefit from the VOC control measures that New Jersey committed to implement in the 8-hour ozone RACT SIP.

Given the overlap of precursors and timing of SIP submittals, the NJDEP initially began work in 2005 to integrate its fine particle control efforts with those for the 8-hour ozone and regional haze SIPs. The NJDEP initially identified about 100 facilities with actual 2002 and 2003 emissions of 5 tons per year or more of PM_{10} (as surrogate for $PM_{2.5}$) or SO_2. Upon closer examination, the NJDEP calculated that facilities with greater than 25 tons per year emissions accounted for 80 percent (%) and 98 percent (%) of total stationary source emissions statewide for PM_{10} and SO_2, respectively.

Then the NJDEP reviewed the source equipment, and corresponding emissions inventories, located at these facilities, and developed a list of types of equipment, or emission units, with actual emissions of at least 5 tons per year of PM_{10} and SO_2. Focusing its feasibility assessment on these emission units, the NJDEP conducted a review of current state and federal requirements such as N.J.A.C.7:27-4, N.J.A.C.7:27-6 and N.J.A.C.7:27-9, New Source Performance Standards (NSPS), and Maximum Available Control Technology (MACT), and an evaluation of whether existing controls at the time of installation were previously considered Best Available Control Technology (BACT), Lowest Achievable Emission Rate (LAER) or State of the Art (SOTA). In addition the NJDEP evaluated other states' regulations, such as those in effect in California, and information listed in the USEPA's RACT/BACT/LAER Clearinghouse (RBLC). Based on this analysis, the NJDEP narrowed the preliminary list of sources to those with the greatest potential for significant reductions of PM_{10} and SO_2 emission levels. The following were the source categories initially selected for further consideration:

Boilers – serving electric generating units (EGUs) firing No. 6 fuel oil and coal, and industrial, commercial and institutional (ICI) fossil fuel-fired units;
Fluid catalytic cracking units (FCCUs) at petroleum refineries;
Furnaces – such as glass, and iron and steel;
Municipal waste combustors (MWCs) (Incinerators) PM portion; and
Stationary diesel engines.

Several source categories from the NJDEP's original short-list were also identified in conjunction with the public and regional efforts to identify reasonable multi-pollutant control options for possible inclusion in the 8-hour Ozone, $PM_{2.5}$ and regional haze SIPs. Some of these same sources were ultimately addressed in the 8-hour ozone RACT SIP.

Although the USEPA encouraged states with overlapping ozone and $PM_{2.5}$ nonattainment areas to coordinate the required SIP revisions, the 8-hour Ozone RACT SIP submittal

was due to the USEPA by September 16, 2006, prior to the finalization of the USEPA's Clean Air Fine Particle Implementation Rule on April 25, 2007, that included details of the $PM_{2.5}$ RACT requirements. According to the Final Rule, states must conduct RACT determinations for stationary sources of direct $PM_{2.5}$ emissions, not PM_{10} as was used in the original RACT analysis. The NJDEP reexamined its earlier 2005 RACT analysis to ensure the NJDEP's presumptive RACT assessment of stationary sources potentially contributing to the $PM_{2.5}$ nonattainment areas and evaluation of potential emission reduction control measures meets the Final Rule's guidance to identify RACT.

In determining RACT for $PM_{2.5}$, the Final Rule requires states address direct emissions of $PM_{2.5}$, and the $PM_{2.5}$ attainment plan precursors, SO_2 and NO_x. Since New Jersey recently conducted a NO_x RACT analysis for the 8-hour ozone standard, the preexisting determination is valid for this RACT analysis. Therefore the NJDEP focused its $PM_{2.5}$ RACT reevaluation on direct $PM_{2.5}$ emissions.

Since the USEPA did not use a classification system to establish emissions thresholds for $PM_{2.5}$ RACT in the Final Rule, the NJDEP set emission cutoffs it believes are necessary and appropriate to implement controls to achieve attainment of the annual and the new daily $PM_{2.5}$ NAAQS. Then the NJDEP conducted an internal assessment of major stationary source categories using the cutoff levels consistent with the 8-hour ozone RACT thresholds. To evaluate RACT, the NJDEP set cutoff thresholds of 25 tons per year at the facility level, and equipment emitting 10 tons per year located at such a facility, of actual $PM_{2.5}$. See the Section on "$PM_{2.5}$ RACT Requirements" in the beginning of this Appendix. Since facilities did not report $PM_{2.5}$ emissions in 2002, the NJDEP used 2005 actual emissions as a baseline in this RACT reevaluation to ascertain the potential for real reductions in determining what source categories and which types of emission units may require additional control.

A search of facilities with actual $PM_{2.5}$ emissions greater than 25 tons per year reported to the State via its Emissions Statement program yielded a list of approximately 40 facilities. Among the largest emitters were electric utilities, petroleum refineries, glass manufacturing, municipal waste combustion, and iron and steel production. Some facilities also reported considerable amounts, greater than 5 tons per year, of facility-level fugitive $PM_{2.5}$ emissions.

Table A4 compares New Jersey's identified sources with the stationary sources and related control measures compiled in the USEPA's "Lists of Potential Control Measures for $PM_{2.5}$ and Precursors," a technical document intended to assist States in developing plans to achieve attainment[10]. See Table A4 on the following pages.

[10] http://epa.gov/pm/measures/pm_control_measures_tables_ver1.pdf

Table A4. Review of USEPA List of Stationary Source Control Measures for $PM_{2.5}$ and SO_2 Precursors

$PM_{2.5}$

Source Category	Description	Potential Control Measures	Notes/Comments
Cement manufacturing	Process equipment	Baghouse	SCAQMD, 2005, limits
	Open storage piles, primary crushing operations and conveying systems	Various controls	NJ sources - < 25 tpy (FC)
Ferrous metals processing	Blast furnace casthouse	Capture hood and baghouse	No sources
	Basic oxygen furnace	Secondary capture and control system	No sources
	Sinter cooler	baghouse	No sources
Petroleum refining	FCCUs	Wet scrubbers; ESP; Sodium bisulfate injection	MARAMA model rule (includes PM limit); N.J.A.C. 7:27-33 (new)
Stationary diesel engines	Including generators and other prime service engines	Diesel particulate filter (DPF); Diesel oxidation catalyst (where DPF not feasible)	NESCAUM, 2003; STAPPA/ALAPCO, Fine Particulate Matter report, March 2006
Utility and ICI boilers	Residual oil	ESP Cyclone	N.J.A.C. 7:27-4 (revision)
Utility boilers	Coal-fired with ESP	Indigo agglomerator; Add collection area to ESP equal to one (or two) fields	N.J.A.C. 7:27-4 (revision)
Ferroalloy production	Open furnaces	Improve capture	No sources
	Pouring and casting	Capture fugitives	No sources
Refractory products manufacturing	N/A	N/A	No sources

Notes: 1. PSEG Sewaren Generating Station has four uncontrolled #6 FO-fired utility boilers.
2. Covanta Essex and Camden County MWCs have no baghouses.
3. Several glass manufacturers have no particulate controls.

SO_2

Source Category	Description	Potential Control Measure(s)	Notes/Comments
Cement kilns	N/A	N/A	No sources
ICI boilers	Coal-fired	N/A	No sources
	Residual oil	Flue gas desulfurization	MANE-VU, 2010 compliance N.J.A.C. 7:27-9 (revision)
	Distillate oil	500 ppm sulfur content 80% $PM_{2.5}$ co-benefit	
Inorganic chemical manufacture operations	Carbon black production	N/A	No sources
Iron and steel	Coke ovens	N/A	No sources
Oil & gas production	Process heaters	Flue gas desulfurization	No sources
Petroleum refining	FCCUs	Catalyst additives; Wet gas scrubbers; Feed hydrotreatment	MARAMA model rule N.J.A.C. 7:27-33 (new)
	Flares	Reduce flaring	MARAMA model rule N.J.A.C. 7:27-33 (new)
	Process heaters	Scrubber (wet/dry/spray dry)	MARAMA TSD
	FO fired process heaters	Eliminate oil fired combustion	MARAMA TSD
	Sulfur recovery units	Increased efficiency and tail gas treatment	MARAMA TSD
Primary aluminum plants	N/A	N/A	No sources
Primary smelters -sintering	Zinc	N/A	No sources
	Lead	N/A	No sources
Pulp & paper	Acid sulfite pulping	Alkaline scrubber; Raise digester pH	No sources (recycled only)
	Recovery furnaces	Reduce S content of black liquor; Regulate furnace temperature	
Sulfur recovery plants	N/A	N/A	No sources
Sulfuric acid plants	--	Increased recovery efficiency	No sources

Utility Boilers	Coal-fired	Scrubber	Mercury rule, CAIR, Consent Decrees N.J.A.C 7:27-10 (revision)
	Residual oil	Scrubber 0.3 – 0.5% fuel sulfur content	MANE-VU, 2010 compliance N.J.A.C. 7:27-9 (revision)
	Distillate oil	0.05% fuel sulfur content	

Based upon this comparison, the following sources were subsequently identified by the NJDEP for further evaluation of available control measures to reduce $PM_{2.5}$ and SO_2 emissions:

Glass Furnaces
Stationary Diesel Engines
Petroleum Refineries
Municipal Waste Combustors (Incinerators) PM portion
Iron and Steel Furnaces
No. 6 Fuel-oil Fired Boilers
Fugitive Dust Sources

Evaluations of the emission units and available control measures for each of these categories are summarized below. Each section describes the source category, affected equipment, viable control technologies, existing regulations, potential rule strategies, projected emissions reductions, and supporting references.

1.3.1 Technical Feasibility Determinations

Following the methodology used for the earlier 2005 assessment of feasible control measures, the NJDEP engineers and scientists completed the technical analysis to identify the most reasonable control opportunities by identifying the number of units in each category, units with existing air pollution control devices, uncontrolled units, effective control measures and efficiencies, reduction benefits, and costs where available.

A. Glass Furnaces

New Jersey has seven existing glass manufacturing plants with a total of 25 furnaces that produce container glass, pressed glass, blown glass, and fiberglass. Nine of these furnaces are electric. Five others use oxy-fuel firing, in which nearly pure oxygen is used for combustion instead of ambient air, reducing the presence of nitrogen which reduces NO_x emissions, a precursor to $PM_{2.5}$ formation, and direct emissions of $PM_{2.5}$. The 8-hour ozone NO_x rule committal would require the remaining furnaces to implement additional emission control measures to comply with the proposed emission limit. Although New Jersey does not intend to stipulate a particular control technology in the rule proposal, the NJDEP anticipates that most furnaces will likely install oxy-fuel firing to meet the more stringent NO_x limits.

Of the 16 non-electric furnaces, four have existing air pollution control devices, electrostatic precipitators, to reduce particulate emissions. The NJDEP compared available stack test results, PM_{10} or TSP as available, to PM_{10} emission rates proposed by the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) in the draft amendments to Rule 4354[11], New Jersey's State of the Art manual and the USEPA's Final Rule for National Emission Standards for Hazardous Air Pollutants for glass

[11] http://www.valleyair.org/Workshops/postings/2007/10-08-07/R4354_rule_W1.pdf

manufacturing area sources[12]. The NJDEP will consider further controls for direct emissions of $PM_{2.5}$ as part of its RACM analysis for the 2006 $PM_{2.5}$ daily standard after further $PM_{2.5}$ emission data is available.

B. Stationary diesel engines

Incomplete combustion of diesel fuel results in direct particle emissions. Based upon the electronic permitting and emissions inventory database information, the NJDEP estimates there are a total of 352 non-emergency stationary diesel engines greater than or equal to 50 horsepower currently in-use in New Jersey. Through the use of add-on particle control, the NJDEP estimates an 85 percent reduction, about 130 tons per year of $PM_{2.5}$ emissions, may be achieved. New Jersey will evaluate the feasibility of an engine control technology retrofit program comparable to California's engine compliance certification program.[13] Provisions of this rule proposal may include emission limits for PM, NO_x, CO, and VOC. Available retrofit add-on controls, engine timing, feasibility of regulating smaller engines (25 – 50 hp), and attainment dates will be considered during rule development.

New Jersey will also propose rules to implement MANE-VU's long-term, regional fuel oil strategy, which would require use of ultra low sulfur diesel (ULSD), 15 ppm sulfur, in stationary diesel engines by 2016. ULSD use for emergency generators is federally mandated by October, 2010.

C. Fluid catalytic cracking unit regenerators at petroleum refineries

As part of a regional effort to attain the 8-hour ozone and fine particle NAAQS, New Jersey is evaluating a rule regulating emissions of PM, NO_x, SO_2, and CO from fluid catalytic cracking units (FCCUs). There are four FCCUs at four facilities located in New Jersey, each equipped with wet scrubbers to absorb SO_2 and remove PM_{10}. All units meet the PM limit, 0.5 lb/1000 lb coke, suggested in MARAMA's model rule for FCCUs.

D. Municipal waste combustors (incinerators) PM portion

In December 1995, USEPA adopted new source performance standards (NSPS) (40 CFR 60 subpart Eb) and emission guidelines (EG) (subpart Cb) for municipal waste combustor (MWC) units with combustion capacity greater than 250 tons per day. Both the NSPS and emission guidelines require compliance with emission limitations for nine pollutants that reflect the performance of maximum achievable control technology (MACT). The emission guidelines required compliance by December 2000, for all existing MWC units, while the NSPS apply to new MWC units. Currently, all New Jersey MWC units are in compliance with the federal plan standards.

On December 19, 2005, the USEPA proposed revisions to the NSPS and EGs for Large Municipal Waste Combustors to reflect the levels of performance achieved due to the

[12] 72 Fed. Reg. 73182, December, 26, 2007.
[13] California Code Rules, Air Toxic Control Measures (CCR-ATCM: September, 2005)

installation of control equipment. The final rule[14] includes a revision to PM emission limits for existing units from 27 milligrams per dry standard cubic meter to 24 milligrams per dry standard cubic meter after April 29, 2009. In practice, all New Jersey Municipal Solid Waste Facilities currently operate below the new Federal guidelines.

In New Jersey, there are 13 MWCs at five resource recovery facilities in Essex, Union, Camden, Gloucester and Warren counties. With the exception of one facility with three MWCs, all have installed selective non-catalytic reduction (SNCR) as NO_x control. All units are equipped with scrubbers for SO_2 control, and electrostatic precipitators (ESP), or baghouses, for PM control. The NOx RACT rule is being revised to reduce allowable NOx levels, which will result in SNCR being installed at the one facility without SNCR.

E. Iron furnaces including electric arc furnaces and cupolas

Minimills produce steel by using electric arc furnaces (EAF) and cupolas produce iron pipe from scrap metal. There is one minimill and a cupola currently operating in New Jersey. The operating cupola and the EAF are already equipped with baghouses. In a preapplication meeting with the NJDEP, another cupola, which is currently not operating, presented their plan to replace their high pressure drop venturi scrubber with a baghouse to meet New Jersey's mercury rule[15] requirements for iron or steel melters by January 3, 2010. The addition of a baghouse may result in the added benefit of reduced $PM_{2.5}$ emissions from this cupola. Baghouse control is reasonably available control technology for $PM_{2.5}$ emission reduction from this source category. Although the NJDEP may evaluate this source category as part of its fugitive dust control initiative (see G. below), no additional rule making for $PM_{2.5}$ emissions is required at this time. The NJDEP will reconsider this source category at the time the more stringent daily $PM_{2.5}$ SIP is due.

F. No. 6 fuel oil-fired boilers

Among the main combustion sources emitting direct $PM_{2.5}$ are coal and oil-burning utility boilers. As part of its 8-hour ozone SIP committal, New Jersey is drafting a rule proposal that will limit multiple pollutant emissions including NO_x, PM and SO_2 from coal-fired boilers serving electric generating units (EGUs), and NO_x from utility boilers burning natural gas, #2 fuel oil and #4 or #6 fuel oil. After reviewing stack test results for PM_{10} from #6 fuel oil-firing utility boilers, the NJDEP is evaluating a particulate limit of 0.0300 lb/MMBtu, consistent with the limit proposal for existing coal-fired EGUs, based on installation of an electrostatic precipitator for control. Upon further evaluation at the time of rule making, including evaluation of the effects of low sulfur oil on particulate emissions, the NJDEP may propose this particulate limit for all boilers firing #6 fuel oil that are greater than 100 MMBtu/hr, if deemed feasible, making the residual oil particulate requirements equivalent to those for coal.

New Jersey also intends to propose rules to implement MANE-VU's long-term, regional strategy to reduce the sulfur content of #6 residual oil to 0.5 percent (%) sulfur by weight

[14] 70 Fed. Reg. 75348-69, May 10, 2006
[15] N.J.A.C. 7:27-27.6

by 2012 in those zones throughout the State that now use #6 fuel oil with a sulfur content in excess of the proposed 0.5 percent (%) maxium. The reduced sulfur fuel is currently available for sale and regulated for use in certain zones of New Jersey and can be considered reasonable. Areas which currently have 0.3 percent (%) sulfur content limits for #6 fuel oil would continue at this level.

G. Fugitive Dust Sources

Fugitive dust is made up of suspended particles caused by human activities and wind. Industrial activities such as quarries and mineral processing can emit significant amounts of fugitive dust. New Jersey intends to address fugitive dust emissions in a new rule proposal twhich contains rule provisions requiring a dust management plan for any facility with a history of dust emissions. The proposal will include a list of source categories that must have a dust management plan and the minimum requirements for a dust management plan.

1.4 Final Technical RACT determinations for $PM_{2.5}$

Table A5 lists the New Jersey candidate source categories identified by the Department for potential emission reductions, not including those already addressed in the 8-Hour Ozone RACT SIP[16].

Table A5. New Jersey Candidate Source Categories for $PM_{2.5}$

Candidate Source Categories	Targeted Pollutants			
	NO_x	VOC	SO_2	PM
Sulfur in fuel oil			X	*
Fugitive dust				X
Municipal waste combustors (incinerators) PM portion	X			X
No. 6 fuel oil-fired boilers			*	X
Stationary diesel engines	X	X	X	X

*Note: Lowering the sulfur content in fuel oil reduces SO_2 emissions while providing $PM_{2.5}$ cobenefit.

1.5 Economic Feasibility Determinations

The USEPA has defined RACT as "the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available

[16] NJDEP. Reasonably Available Control Technology (RACT) for the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS) and other Associated State Implementation Plan (SIP) Revisions for the Fine Particulate Matter National Ambient Air Quality Standard (NAAQS), Regional Haze, and the Clean Air Act Requirements on Transport of Air Pollution. New Jersey Department of Environmental Protection. August 1, 2007.

considering technological and economic feasibility."[17] In the final $PM_{2.5}$ Implementation Rule, the USEPA also defines "Presumptive RACT" as the norm achievable by the source category.[18] The NJDEP has concluded that where several facilities in a source category are currently controlled to a lower emission level, then that level should be presumed to be RACT for the other facilities in that source category. Also, even without existing controls on any units in a source category, technology transfer from similar source categories with more effective controls should be considered. For technology transfer, the determination of economic feasibility for RACT purposes is an estimation of whether or not the costs are "reasonable" in comparison with the costs of similar controls for comparable industries. In general, the costs and cost effectiveness of much larger sources, such as 1000 ton per year EGUs, should not be compared to smaller sources, such as 10 ton per year industrial boilers, for the purpose of avoiding control of smaller sources.

RACT rule economic analysis generally focuses on average cost for a source category to determine if the source category should be further regulated. This average cost is not an appropriate cutpoint to decide the reasonableness of regulating individual sources. Actual costs for sources will be a range of costs below and above the average cost. Also, there may be considerable difference in costs for individual sources because some sources are already controlled to some degree. In view of the variability of RACT costs among sources and source categories, and for emission reductions of different pollutants, the NJDEP concludes that once a number of sources in a source category achieve a lower emission level, it is reasonable for other similar sources to do the same, unless there are site specific circumstances that result in costs much higher than the average costs. Otherwise about half the sources in the source category would not be controlled if an emission limit were based on costs exceeding an average cost. RACT rules should require that lowest reasonable limits be achieved by almost all units in the source category. For some sources, an alternate emission limit (AEL) may be appropriate if site specific circumstances and the resulting costs are truly unusual, that is significantly higher than almost all other sources.

In conducting its $PM_{2.5}$ NAAQS Regulatory Impact Analysis (RIA)[19], the USEPA used the AirControlNet tool to identify and rank stationary source controls based on estimates of costs and benefits that may result from attainment nationwide. In this RIA the USEPA selected controls costing from $20,000 per ton to $350,000 per ton for direct $PM_{2.5}$, SO_2 and NO_x for evaluation. The USEPA did not include "a fixed dollar per ton cost threshold for RACT"[20] in the Final Rule. In considering what level of control is needed for attainment, the cost per ton is logically higher for sources that are in, or impact, more serious attainment problems. The USEPA also stated that it is inappropriate to establish a fixed cost per ton range for direct $PM_{2.5}$ and the fine particle precursors, NO_x and SO_2, because the same reduction of each pollutant has a different impact on attainment. The

[17] 44 Fed. Reg. 53762, September 17, 1979.
[18] 72 Fed. Reg. 20610, April 25, 2007.
[19] U.S.EPA 2006. Regulatory Impact Analysis for the Particulate Matter National Ambient Air Quality Standards. Air Benefits and Costs Group, Office of air Quality Planning and Standards, Research Triangle Park, NC, October 6, 2006.
[20] 70 Fed. Reg. 20619, April 25, 2007.

NJDEP agrees that much higher costs are reasonable for direct emissions of PM2.5 in or near a nonattainment area. However, RACT is a baseline requirement that should be applied in nonattainment areas independent of the severity of nonattainment.

Despite the USEPA's "no classification" approach to $PM_{2.5}$ designations, the USEPA states in the rule "that areas with more severe attainment problems will need to implement more stringent measures to attain."[21] Therefore, for nonattainment areas with higher ambient $PM_{2.5}$ levels, higher costs for $PM_{2.5}$, SO_2 and NO_x controls are reasonable. This statement is appropriate for measures to attain the standards, but not for RACT. New Jersey's precedents for already requiring costs at the higher end of the USEPA's range for retrofitting fine particle control on existing mobil sources, and increasing difficulty of finding source categories where emission reductions are feasible, justify relatively high cost effectiveness ratios to achieve healthy air. For example, ongoing retrofits of particulate traps on diesel vehicles have a cost effectiveness of greater than $100,000 per ton, which is reasonable given the health effects of fine particles.

RACT is also important in reducing transported air pollution from states downwind of nonattainment areas. In determining economic feasibility, we need to recognize the economic and health costs of fine particles both within New Jersey and outside our borders, which is the price of continuing nonattainment. The USEPA estimated that relatively small reductions in ambient $PM_{2.5}$ levels produce worthwhile public health benefits.[22]

Reductions of $PM_{2.5}$, and particularly the precursors, SO_2 and NO_x, are necessary over broad regions because of their impacts on levels of fine particles and regional haze downwind. The recognized difficulty in achieving the annual and newer, more stringent daily fine particle NAAQS justifies RACT throughout New Jersey and elsewhere, especially in those areas upwind of areas designated nonattainment. New Jersey is one of those states upwind of fine particle nonattainment areas in other states. The high fine particle levels in New York justify and require meaningful RACT rules in New Jersey. Likewise the high fine particle levels in New Jersey justifies and requires meaningful RACT measures in the states upwind of New Jersey.

The NJDEP intends to specify RACT at the lowest emission limit that a reasonable number of similar industries had already successfully implemented for each source category. This is appropriate and reasonable, not only in terms of its technological feasibility, but in terms of determining economic feasibility as well. As the State moves ahead to implement these emission levels, an economic analysis will be prepared for each source category when specific emission limits are developed. In addition, upon adoption of more stringent standards, a facility may conduct an individual emission unit economic impact analysis as part of an application for an alternative emission limit (AEL), if the facility documents and justifies that unusual site specific circumstances would make their costs much higher than the costs for similar units and would also be economically infeasible. The NJDEP will continue to evaluate AELs on a case by case basis, using the

[21] 72 Fed. Reg. 20598, April 25, 2007.
[22] 72 Fed. Reg. 20590, April 25, 2007.

criteria previously adopted in N.J.A.C. 7:27-19; and expanding the applicability of AELs to new requirements for SO_2 and PM emissions.

Like the USEPA, the NJDEP does not expect to specify a single $/ton cost/effectiveness ratio for all source categories, because other factors could justify different costs for different source categories. These include, but not limited to: quantity of emissions, quality of emissions (including toxicity), seasonal and daily pattern of emissions, impacts on other states, affordability for the average facility in a source category, and the extent of current use of a control measure by other sources in the same category. The NJDEP will continue to base RACT primarily on technological feasibility and at least some degree of use for a particular source category. Costs will primarily be considered for technology transfer from one source category to another and on a unit specific basis where costs are shown in an Alternative Emission Limit (AEL) application[23] to be economically infeasible because of unusual site specific circumstances and extreme costs.

1.6 Commitments for $PM_{2.5}$ Control

Section 172(c)(6) of the Clean Air Act (42 U.S.C.§ 7502(c)(6)) requires nonattainment SIPs to "include enforceable emission limitations, and such other control measures, means or techniques… as well as schedules and timetables for compliance, as may be necessary and appropriate to provide for attainment." The following presents New Jersey's commitments to achieve additional PM, SO_2, and NO_x reductions that are most likely to result in a significant decrease in $PM_{2.5}$, and address the RACT requirement for fine particle nonattainment. Table A6 lists the selected source categories and the targeted pollutants that were discussed in New Jersey's 8-Hour Ozone RACT SIP and/or in New Jersey's rule making process, which will not only reduce precursors to ozone, but will also reduce precursors to $PM_{2.5}$ and regional haze as well.

[23] N.J.A.C. 7:27-19.13

Table A6. New Jersey $PM_{2.5}$ RACT

Candidate Source Categories	Targeted Pollutants				Affected Rules	Estimated Schedule
	NO_x	VOC	SO_2	$PM_{2.5}$		
Asphalt pavement production plants	X				N.J.A.C. 7:27-19.9[1]	Adoption by 4/1/09
Glass manufacturing furnaces	X		2	2	N.J.A.C. 7:27-19.2, 19.10[1]	Adoption by 4/1/09
Industrial/commercial/institutional boilers	X				N.J.A.C. 7:27-19.7[1]	Adoption by 4/1/09
Oil and Gas Fired Electric generating units (EGUs)	X				N.J.A.C. 7:27-19.4[1]	Adoption by 4/1/09
High Electric Demand Day (HEDD) units	X				N.J.A.C. 7:27-19.4, 19.5, 19.29[1]	Adoption by 4/1/09
Coal-fired boilers serving EGUs	X		X	X	N.J.A.C. 7:27-4, 10 & 19.4[1]	Adoption by 4/1/09
Case by Case, Facility-specific emission limit and alternate emission limit	X	X			N.J.A.C. 7:27-16.17 & 19.13[1]	Adoption by 4/1/09
Municipal solid waste combusters (incinerators) NOx rule	X				N.J.A.C. 7:27-19.12[1]	Adoption by 4/1/09
Sewage sludge incinerators	X				N.J.A.C. 7:27-19.28[1]	Adoption by 4/1/09

Notes: 1. Proposed on August 4, 2008
2. Replacing fossil fuel with oxygen, as in oxy-fuel firing, reduces NO_x emissions while providing SO_2 and $PM_{2.5}$ cobenefits.

1.7 Additional New Jersey Actions for Future $PM_{2.5}$ Control

New Jersey has been working with other states, including the MANE-VU and MARAMA member states, in implementing reasonable measures to reduce PM, SO_2 and NO_x emissions to reduce interstate pollution. As a MARAMA member state, New Jersey is working on a new rule proposal for petroleum refineries using the MARAMA model rules developed for fluid catalytic cracking units (FCCUs), flares and equipment leaks as a guideline. Also, New Jersey intends to include provisions regulating NO_x emissions from process heaters and boilers at petroleum refineries.

The states of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) signed a statement[24] on June 20, 2007 to evaluate lowering the sulfur content of fuel oil over time. New Jersey intends to propose rules to implement these long-term, regional strategies, consistent with the MANE-VU statement, affecting the sulfur content and corresponding emisson limits of the following types of fuel:

[24] Statement of the MANE-VU Concerning a Course of Action within MANE-VU toward Assuring Reasonable Progress, June 20, 2007.

Light oil (No. 2 fuel oil, diesel fuel used by stationary sources)
Heavy oil (No. 4 fuel oil and No. 6 fuel oil).

The Department identified additional potential sources of emission reductions through its internal technical analyses and the collaborative efforts of the New Jersey air quality workgroups. In addition to the regional measures cited above, New Jersey intends on addressing emissions from the following sources as follows:

- Municipal waste combustors (incinerators) PM portion: New Jersey intends to revise the emission limit for PM as a compliance requirement in each facility's Title V operating permit, upon promulgation of a Federal rule, State rule or modification of the MWC;

- Fugitive dust (PM): New Jersey intends to address fugitive dust emissions in a new rule proposal that will include rule provisions requiring a dust management plan for any facility with a history of dust emissions.

In addition, the Department intends on evaluating the feasibility of a more stringent particulate limit for No. 6 fuel oil-fired boilers and stationary diesel engines.

Although emission reduction benefits from the efforts described above will occur after the 1997 $PM_{2.5}$ NAAQS attainment date (April 5, 2010), the reductions will help the State attain the new 2006 24-hour $PM_{2.5}$ standard, as well as all the other $PM_{2.5}$-related air quality goals discussed in Chapter 1.

1.8 Requests for USEPA Actions

Based on estimates using AP 42 emissions factors, the emissions baselines may not accurately reflect filterable plus condensable $PM_{2.5}$ emissions. The USEPA should expeditiously issue an approved test method to measure condensable $PM_{2.5}$ so states may develop data to further assess available control measures and to establish enforceable $PM_{2.5}$ emission limits.