

MEMORANDUM

To: Lisa A. Vest

Through: James D. Werner
Ali Mirzakhali, P.E.
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From: Mark A. Prettyman

Subject: **AQM Response Document to Comments Submitted on the Proposed Adoption of Regulation No. 1144 and the Proposed Amendment to Regulation No. 1102**

Date: December 6, 2005

The following are Air Quality Management's (AQM) responses to the written comments on the proposed Regulation No. 1144, "Control of Stationary Generator Emissions," and the proposed amendments to Regulation No. 1102, "Permits." No other comments were received.

Commenter: James L. Cabbage, Jr.; Delaware Volunteer Firemen's Association (DVFA); June 17, 2005

Comment 1: Mr. Cabbage commented that the DVFA opposes the proposed regulation and requests an exemption from the proposed Regulation No. 1144 because it "will be an additional burden to the Public Safety Community."

Response 1: The purpose of Regulation No. 1144 is to help ensure that the air emissions from new and existing stationary generators do not cause or contribute to Delaware's air quality problems. Thus, the proposed regulation includes various emissions standards, operating requirements, fuel sulfur content limits, and recordkeeping requirements applicable to covered generators. The Department does not believe that these requirements are overly burdensome in that they are necessary to ensure that the purpose of the proposed regulation is achieved. In regards to generators at fire stations, or any other generators used only during times of emergency, the proposed regulation would require the owners of these generators to:

- send in an initial notification to the Department so that the Department can create an accurate database of the universe of generators in the State, which will enable the Department to evaluate the effectiveness of the regulation and the need for future amendments;
- use only clean, low-sulfur diesel fuel to reduce diesel particulate matter and sulfur dioxide emissions, which are themselves harmful to public health and the environment,

and which contribute to Delaware's violations of the federal fine particulate matter National Ambient Air Quality Standard (NAAQS); and

- keep minimal but necessary records regarding the use, testing, and maintenance of their emergency generators to give the Department the information needed to calculate emissions from these generators which will enable the Department to evaluate the effectiveness of the regulation and the need for future amendments.

However, the Department recognizes the unique situation regarding the use of generators at fire stations. Most fire stations in Delaware are staffed by volunteers, who are not paid, and are providing a very important service to the public on their own time. Volunteer fire fighters may not have the additional time, beyond their own personal and professional lives, to ensure that complete and accurate recordkeeping of a generator's use will be performed. While it is imperative that a fire station have an emergency generator to provide power during an emergency, it is not necessary for the generator to be operated for non-emergency purposes. If it were ensured that generators at fire stations were only being used for emergency purposes, various assumptions could be made in estimating the emissions impact from this realm of generators if the proposed regulation did not apply to them. The DVFA previously provided the Department with a list of generators installed at fire stations, their estimated standby power rating, and if they have a testing or maintenance schedule, which can be used in estimating the impacts from existing generators at fire stations. Restricting the use of generators at fire stations to emergency use only shall help the Department ensure that the emissions from these units will not unexpectedly increase. Thus, after further consideration of the DVFA's request, it is the Department's response that an exemption shall be included in the proposed regulation which will exempt existing, emergency generators located at the stations of the member companies of the DVFA. These stations will be listed in a new Section 9.0 of the regulation. However, any new generators will be subject to the proposed regulation once it becomes effective. Additionally, a restriction will be added to the proposed regulation which will prohibit any generator at a station listed in the new Section 9.0 from being used as a distributed generator.

Commenter: Joseph L. Suchecki; Engine Manufacturers Association (EMA); August 25, 2005

Comment 2: "EMA continues to object to the inclusion of CO₂ [carbon dioxide] as a pollutant in the regulation. Despite the fact that stationary engines should not have any difficulty in meeting the proposed standards, EMA continues to believe that it is inappropriate to regulate CO₂ as a pollutant in Regulation 1144."

Response 2: This response addresses the comment above by Joseph Suchecki (EMA), as well as Comments 8, 11, and 18 below by David Bacher (NRG), Paul Jann (DuPont), and Andrew Vahey (DP&L), respectively, concerning CO₂.

In regards to the Department's authority to regulate CO₂, the Department is directed to regulate CO₂, as an "air contaminant," pursuant to 7 Del. C., Chapter 60. Section 6001(a) of 7 Del. C. Chapter 60 states that the General Assembly has made certain "findings concerning the development, utilization and control of the land, water, underwater and air resources of the

State.” Among others, these findings include:

“(3) The regulation of the development and utilization of the land, water, underwater and air resources of the State is essential to protect beneficial uses and to assure adequate resources for the future;” and

“(5) The land, water, underwater and air resources of the State must be protected from pollution in the interest of the health and safety of the public;”

In order to effectuate these findings, Section 6001(c) of 7 Del. C. Chapter 60 provides for “a program for the control of pollution of the land, water, underwater and air resources of the State to protect the public health, safety, and welfare.” Section 6002 of 7 Del. C. Chapter 60 goes on to define “air pollution” as:

“the presence in the outdoor atmosphere of 1 or more air contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human, plant or animal life or to property, or which unreasonably interferes with the enjoyment of life and property within the jurisdiction of this State, excluding all aspects of employer-employee relationships as to health and safety hazards.”

Section 6002 of 7 Del. C. Chapter 60 also defines what qualifies as an “air contaminant”:

“particulate matter, dust, fumes, gas, mist, smoke or vapor or any combination thereof, exclusive of uncombined water.”

CO₂ is clearly an air contaminant, according to the Delaware statute, and can cause pollution. While CO₂ may or may not be directly “injurious to human, plant or animal life or to property,” it does have the potential to interfere with the “enjoyment of life and property” within Delaware, and elsewhere, as detailed below. The Department was established pursuant to Chapter 60 of 7 Del. C. to carry out the stated policies identified above. Therefore, it is the Department’s responsibility to control CO₂, since it is an air contaminant which can cause air pollution. However, Delaware is not alone in categorizing CO₂ as an air contaminant. On October 18, 2005, New Jersey’s Acting Governor approved amendments to New Jersey’s Department of Environmental Protection (NJDEP) regulations, classifying CO₂ as an air contaminant. The NJDEP determined, based on compelling scientific evidence, that regulating CO₂ as an air contaminant is in the “best interest of human health, welfare, and the environment.” By classifying CO₂ as an air contaminant, as the Delaware statute does, New Jersey will be able to pursue regional efforts to reduce CO₂.

It is correct that CO₂ is not a federally regulated pollutant, but the Environmental Protection Agency’s (EPA) decision to not regulate CO₂ does not prohibit Delaware from regulating its emissions. The Department must abide by Delaware’s laws, which must be as stringent, if not more stringent, than federal laws with respect to the Clean Air Act and its criteria pollutants. Nonetheless, the Department is bound by Delaware laws with respect to controlling pollution. The broad definition of “air contaminants” in the Delaware statute allows the Department to control pollutants which may not be controlled federally, such as CO₂, which, in this singular incidence, makes Delaware laws more stringent than federal laws. The fact that EPA has not chosen to address CO₂, does not impact the Delaware statute. There are various pollutants which are not federally regulated, and the Department is, or will be, addressing them where important to Delaware (such as total suspended particulates, as regulated in Regulation No. 1125, “Requirements for Preconstruction Review”), as time, resources, and justification permits, and of course, within reason. With regards to CO₂, the Department has categorized it as a pollutant which needs to be addressed, for various reasons.

There are various environmental reasons for including an emission standard for CO₂ in the proposed regulation. The combustion of fossil fuels by internal combustion engines yields various exhaust gases, including CO₂. The amount of CO₂ emitted from the combustion of fossil fuels depends on various factors, such as an engine's efficiency. In the simplest sense, CO₂ emissions are directly proportional to fuel consumption – the more fuel it takes an engine to produce a certain amount of power, the more CO₂ the engine will emit. If an engine is more efficient (*i.e.* uses less fuel to produce the desired/required output of energy), it will not have to use as much fuel to produce the same amount of energy, and will therefore emit less CO₂. In developing their model rule for smaller-scale electric generating units, the Regulatory Assistance Project (RAP) took this into consideration in setting CO₂ standards. RAP wanted to encourage the deployment of efficient technologies, but it recognized that there are currently no practical aftertreatment controls to remove CO₂ from an engine's exhaust. Thus, the RAP Model Rule [Exhibit 12], on which the proposed regulation is based, includes CO₂ standards which can be met by existing and new engines – a fact which Mr. Suchecki clearly confirms in his comment to the record. The three-tier phase-in of the proposed regulation's emissions standards provides time, and incentives, for manufacturers of distributed generators and add-on controls to produce equipment that responds to such standards. While the first two tiers of the CO₂ standard are set at 1900 lb/MWh, which is clearly a manner of capping CO₂ emissions, the RAP Model Rule states that the third tier standard of 1,650 lb/MWh assumes efficiency among gas-fired technologies of at least 24% and will require improvements in some generators. Since increases in efficiency reduce a generator owner's fuel costs (which is currently a very important issue and may become even more so in the future), it is reasonable to expect efficiency improvements will be largely market-driven, with the co-benefit of reduced CO₂ emissions.

Additionally, Delaware and other participating states are transitioning from a situation of total non-regulation of CO₂ and other greenhouse gases, to an interim policy of beginning to address them without requiring significant immediate control efforts. Delaware is participating with other Northeastern and Mid-Atlantic States in a project called the Regional Greenhouse Gas Initiative (RGGI), whose purpose is to develop a regional strategy for reducing greenhouse gases. This regional effort, in combination with Delaware's and other states' regulations requiring CO₂ standards for distributed generators, should represent a market share sufficient to help influence manufacturing production decisions. Furthermore, Section 3.3 of the proposed regulation requires the Department to complete a review of the technology and emissions rates of generators in Delaware, within 4 years after its effective date. If this review reveals that the third tier CO₂ standards are beyond the technological advancements expected for the future, the regulation may be amended at that time to reflect a more appropriate CO₂ standard.

Increasing the efficiency of a generator's engine will decrease its CO₂ emissions, but the proposed regulation offers other methods for a generator to comply with its CO₂ standards. Section 8 of the proposed regulation details three non-aftertreatment methods to help generator owners comply with its standards for CO₂ and other pollutants. The first method involves taking credit for avoided emissions from flared fuels. If a generator is operating on a waste, landfill, or digester gas, the owner can deduct actual or default emissions that would have been produced had the gas been flared, from the actual emissions of the generator. The second method allows combined heat and power (CHP) installations to take emissions credit for their thermal output. A

CHP system that meets the requirements of the proposed regulation may receive a compliance credit against its actual emissions based on the emissions that would have been created by a conventional separate system used to generate the same thermal output. This credit shall be subtracted from the actual generator emissions for purposes of calculating compliance with the emissions standards of the proposed regulation. The third method allows generator owners to add the electricity savings supplied by a non-emitting electricity source (*i.e.*, wind, solar energy) to the electricity supplied by the generator for the purpose of calculating compliance with the emissions standards. Although generators should already be compliant with the CO₂ standards, these three methods allow a generator to comply with the CO₂ standards without using any sort of aftertreatment devices, if CO₂ control is necessary.

Regulating CO₂ emissions of generators will not cause any financial burden on the generator owner. The primary function of a generator is to generate electricity in the absence of available electricity. The need to purchase and operate generators is not for financial gain; rather it is to avoid financial loss. Other than those generators which operate to generate electricity to meet base load demands, generators are typically only used for emergency purposes. If a generator is being used for purposes other than emergencies (*i.e.*, it is a *distributed generator*), it is most likely being operated as a part of a peaking, or load management, program. In such programs, the generator owner is financially compensated, in one form or another, for the generator's operation. While there may be costs associated with a distributed generator complying with the proposed regulation, it is up to the generator owner to weigh the financial pros and cons of operating at times other than during emergencies. Specifically in regards to certifying a generator's compliance with the CO₂ standards, the proposed regulation does not require emissions testing to be performed if adequate documentation can be provided which proves the generator's compliance. If such documentation cannot be provided, emissions testing may be necessary. However, regarding CO₂, simple portable emissions analyzers are available for rent, or a laboratory could be contracted to perform such testing. Note that it is a generator owner's choice to operate a generator as a distributed generator, and it should have no bearing on the proposed regulation since the proposed regulation allows the use of the generator for emergencies only without imparting any significant financial hardship or burden (*i.e.*, the proposed emission standards, to include the CO₂ standard, do not apply to emergency only generators; they apply only to distributed generators).

Another reason for including CO₂ standards in the proposed regulation is to be consistent with the Delaware Climate Change Consortium's (DCCC) 2010 target of reducing greenhouse gases, such as CO₂, by 7% below Delaware's 1990 emissions. In January 2000, the DCCC published the Delaware Climate Change Action Plan (DCCAP) [Exhibit 40] which recognized that, while greenhouse gas emissions are associated with virtually every social and economic activity in contemporary society, rising atmospheric levels of greenhouse gases have intensified, increasing the amount of heat retained by the earth, and has led to a change in global climate. The DCCAP discusses the impact of such a climate change, which may include greater precipitation extremes, induced extreme weather events, rising sea levels, shoreward erosion, saltwater intrusions, altered tidal ranges, nutrient transport disruption, losses of coastal habitat, and increased human health effects such as respiratory illnesses, heat stress, and allergenic disorders. The DCCAP also references an EPA fact sheet entitled "Climate Change and Delaware" [Exhibit 39] for possible vulnerabilities and impacts of climate change on Delaware and the Mid-Atlantic region.

Specifically, the DCCAP notes that a climate change brought on by greenhouse gases could result in a regional increase in ground-level ozone; rising salinity levels in Delaware's inland bays, wetlands, and estuaries; adverse affects on agriculture in Delaware; and a reduction in the extent and density of Delaware's forests. Thus, the DCCC published the DCCAP in order to "provide Delawareans with a practical, analytically-based strategy to contribute to regional, national and international efforts to reduce greenhouse gas emissions." Among other policy recommendations made to achieve the DCCC's goal, the DCCAP recommends the "adoption of an emission standard for the State's portfolio of electric generation units...[that] would entail a cap on the overall emissions of CO₂ per unit of electricity generated within the State." As it was discussed during the Distributed Generation Regulation Development Workgroup meetings, inclusion of the CO₂ standard in the draft distributed generation regulation of 1900 lb/MWh is designed to reflect a cap at the current expected emission rate of CO₂ for generators. Thus, including CO₂ standards in the proposed regulation helps to accomplish this policy recommendation and helps to satisfy the emission reduction goals set by the DCCC.

One commenter opined that the Department's Start Action Notice did not authorize the Department to regulate CO₂ in this regulation. The Department's Start Action Notice is a document with no legal effect on the external public process. The proposed regulation that was put out for public notice clearly included the Department's proposal to regulate CO₂ emissions and the public has been on notice of this concern throughout the entire public process. Consequently, it is not significant that the Start Action Notice document (a short form) did not discuss the details of the final proposed regulation.

Significantly, the commenters have not claimed any undue burden from the inclusion of the CO₂ limit, or that their existing or future generators will be unable to comply with the limit. To the contrary, Mr. Suchecki was the commenter to opine on this issue, and he indicated that stationary engines should not have any difficulty in meeting the proposed standards. Further, no one has alleged that it will be necessary to add on any supplemental controls or additional, unreasonable costs for the utilization of the generators. Further, the Department believes that Delaware will benefit environmentally from the regulation of CO₂, and none of the commenters have disputed that conclusion.

In sum, the thrust of the comments against inclusion of the CO₂ limit is that since the federal government has not chosen to list CO₂ as a criteria pollutant, the Department should not be regulating it. This is not a sufficient justification and based on the record, there is no basis for removing the CO₂ requirement from the proposed regulation. Thus, in consideration of all stated above, it is the Department's response that more than adequate authority exists to regulate CO₂ consistent with the Delaware statute, and the record does not support removing the CO₂ standard from the proposed regulation which sets standards for stationary generators.

Comment 3: "The emissions standards for new emergency generators in Section 3.1.2 need to be clarified to ensure that aftertreatment devices are not required. Section 3.1.2 needs to be modified to clarify that emergency engines only need to meet Tier 2 and Tier 3 nonroad standards and not the newly developed Tier 4 standards. The reference to Chapter 1039 and 1048 should be removed. Alternatively, the regulation could state that emergency engines are required to meet the recently proposed US EPA NSPS regulation for compression ignition

engines which will not require emergency engines to use aftertreatment devices.”

Response 3: EMA’s comments address that emergency generators are not expected to be operated for extended periods of time. This statement is true, but this should not preclude a new, emergency generator’s emissions from being “clean.” Current technology suggests that new emergency generators would be required to use aftertreatment devices in order to comply with the Tier 4 Nonroad standards of 40 CFR 1039, as required by Section 3.1.2 of the proposed regulation. However, technological advancements could be made before the effective date of the Tier 4 Nonroad standards which would not require emergency generators to need aftertreatment devices to meet those standards. Thus, it is the Department’s response to not revise Section 3.1.2 of the proposed regulation to remove the reference to 40 CFR 1039. Under Section 3.3 of the proposed regulation, the Department is required to complete a review of the technology and emissions rates of generators in Delaware, within 4 years after its effective date. During this review, if it is determined that new emergency generators will not be able to achieve the Tier 4 Nonroad standards without aftertreatment, or without affecting the generators’ performance and operation under emergency conditions, the regulation may be amended to delete the reference to 40 CFR 1039 in Section 3.1.2.

The Department also does not agree with the removal of the reference to 40 CFR 1048 in the proposed regulation. The standards of 40 CFR 1048 apply to new, spark-ignition nonroad engines with maximum engine power above 19 kW, built on or after January 1, 2004. The Tier 1 and Tier 2 standards of 40 CFR 1048 take effect in 2004 and 2007, respectively. Additionally, the emissions standards of 40 CFR 1048 are very similar to the Tier 3 emissions standards of 40 CFR 89, which controls the emissions of new and in-use, nonroad compression-ignition engines. Thus, it is the Department’s response that Section 3.1.2 of the proposed regulation not be revised to remove the reference to 40 CFR 1048.

Comment 4: “The emissions standards of Section 3.2.2 for new distributed generators using landfill and digester gases should apply to engines greater than 200 hp.”

Response 4: Landfill and digester gases are fuels that are routinely flared. Section 8.1 of the proposed regulation allows credits to be used toward attaining the emissions standards if a generator is operated on fuels which would otherwise be flared. This mechanism allows such generators operating on gases which are typically flared to comply with the emissions standards of Section 3.2.2, even if the generator cannot technologically meet these emissions standards. EMA’s December 14, 2004 comments state that the allowance of credits for flared fuels “allow[s] slightly higher emissions levels where needed.” If generators with engines smaller than 200 hp, operating on flared fuels, cannot meet the emissions standards in Section 3.2.2, Section 8.1 provides a mechanism for them to be able to comply with the emissions standards. Thus, it is the Department’s response that Section 3.2.2 should not apply only to generators with engines greater than 200 hp.

Comment 5: “EMA recommends that the time period for compliance [in Section 7.1.2] to the standards be set at one year instead of 5 years.”

Response 5: In his letter, Mr. Suchecki writes that “the standard industry practice for stationary engines and generators is to warrant or guarantee products and emissions for one year,” as opposed to the five years suggested in the proposed regulation. Mr. Suchecki also writes that “the 3,000 hour certification time period is much more reasonable and within the bound of normal industry practice.” The proposed regulation states that a supplier shall certify that a generator is capable of meeting the regulation’s requirements for the lesser of 3,000 hours of operation or five years, if the supplier seeks certification for its generator. Section 89.104(c) of 40 CFR Part 89 “Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines” states:

“The warranty periods for warranties imposed by the Clean Air Act and §89.1007 for all engines rated under 19 kW, and for constant speed engines rated under 37 kW with rated speeds greater than or equal to 3,000 rpm, are 1,500 hours of operation or two years of use, whichever first occurs. For all other engines, the warranty periods for warranties imposed by the Clean Air Act and §89.1007 are 3,000 hours of operation or five years of use, whichever first occurs.”

It is a federal requirement that manufacturers of new compression-ignition engines warranty certain engines for a time frame of 3,000 hours of operation or five years. The same time frame for a manufacturer’s warranty can be found in the Nonroad standards of 40 CFR Part 1039, for compression-ignition engines of similar sizes in 2008 or later. The Department believes that it is reasonable to require generator manufacturers to certify that their generators can meet the emissions standards in the proposed regulation for the same time frames as warranties required federally for the engines which are used to power the generators. Thus, it is the Department’s response that compliance time frame in Section 7.1.2 in the proposed regulation not be revised.

Comment 6: “The regulation should clarify that if a supplier certifies a generator in accordance with Section 7.1 of the proposed regulation that the owner does not have to verify the compliance with the emissions standards as required by Section 7.3.”

Response 6: It is the intention of Section 7.3 of the proposed regulation to have generator owners demonstrate to the Department that their generator(s) complies with the applicable emissions standards of Section 3.0. Owners can verify compliance by providing information or data such as those suggested in Sections 7.3.1 through 7.3.3. If a person purchases a generator which is certified to meet the emissions standards of the proposed regulation, as detailed in Sections 7.1 and 7.2, Section 7.3 is not meant to require the person to perform additional testing on the generator to ensure that it meets the applicable emissions standards. Instead, Section 7.3 requires the person to show the certification of the generator to the Department in order to prove that its emissions have already been tested and have been certified to meet the applicable emissions standards. This certification will be performed by the generator manufacturer if it is to be certified under Section 7.1 of the proposed regulation. If the generator is to be certified under Section 7.2, the manufacturer of the generator’s engine will perform the certification.

Section 7.3 is being revised to clarify the information a generator owner must submit to the Department in order to verify its compliance with the applicable emissions standards.

Commenter: David Bacher; NRG Energy, Inc.; August 29, 2005

Comment 7: Mr. Bacher comments that the compliance date for existing, distributed generators should be twenty-four months after the regulation's effective date, and for larger or more complex retrofits, he suggests a minimum compliance date of thirty-six months after the regulation's effective date.

Response 7: The compliance date for existing, distributed generators in the proposed regulation is the beginning of the 2007 ozone season. Delaware is currently classified as "non-attainment" for the National Ambient Air Quality Standards for ground-level ozone and fine particulate matter. Delaware's compliance with these standards will be based upon the monitored ambient air in 2007-2009. The compliance deadline of the beginning of the 2007 ozone season allows the benefit from the emissions reductions achieved by the existing, distributed generators to be realized at the beginning of the monitored three year period. Assuming the effective date of the proposed regulation will be at the beginning of 2006; this will allow a compliance period of 15 months after the effective date for generator owners to bring their generators into compliance. This timeframe is adequate for a generator owner to "evaluate and retrofit existing sources or replace them." A selective catalytic reduction (SCR) system is one type of retrofit technology which could be used to help bring an existing, distributed generator into compliance with the emissions standards of the proposed regulations. In discussions with the manufacturers and installers of such systems, a generator can be retrofitted with an SCR system within three to six months. Additionally, it must be noted that this regulation development process began in July 2003. The past 28 months have provided ample notice to existing generators owners that a regulation was being developed, and that compliance options should be researched and considered.

Despite the above, the Department agrees that there could be potential hurdles in complying with the proposed regulation's requirements. There are many factors which need to be considered if a generator is to be retrofitted to comply with the proposed regulation. Many potential problems could arise, whether they are economical, technological, or otherwise. Thus, it is the Department's response that the compliance date in the proposed regulation not be revised for existing, distributed generators. However, a new provision shall be added to Section 1.3 which will allow an owner of an existing, distributed generator to request a one (1) year compliance extension, if necessary. If requested, the owner must provide the Department with a reasonable basis for the request, and demonstrate to the Department that the existing, distributed generator's continued emissions will not delay Delaware's attainment of the National Ambient Air Quality Standards for 8-hour ozone or fine particulate matter.

Comment 8: Mr. Bacher comments that the emissions limitations for CO₂ should be removed from the proposed regulation.

Response 8: See *Response 2*, above, regarding the Department's response to comments concerning CO₂.

Commenter: Paul R. Jann; DuPont Company; August 31, 2005

Comment 9: Mr. Jann comments that “DuPont believes that this regulation will cause financial hardship on small businesses, commercial and institutional facilities, as well as R&D facilities that operate electrical generators and, by this regulation, are required to burn more expensive low-sulfur fuels, install high cost emissions controls that may or may not be able to achieve the proposed emission limits, perform expensive source emission testing, and comply with extensive record-keeping and reporting requirements.”

Response 9: The Department does not agree that the proposed regulation will impart a financial hardship on generator owners. As it was stated in *Response 2* above, there may be costs associated with a distributed generator complying with the proposed regulation, and it is up to the generator owner to weigh the financial pros and cons of operating at times other than during emergencies. It is a generator owner’s choice to operate a generator as a distributed generator, usually for some sort of financial gain. This decision should have no bearing on the proposed regulation since it allows the use of the generator for emergencies only without imparting any significant financial hardship or burden. Again, the choice of purchasing and operating an emergency generator is to avoid financial loss, not to provide financial gain.

The proposed regulation is necessary to help reduce the health related impacts of air pollution and to help Delaware reach attainment of the National Ambient Air Quality Standards for fine particulate matter and ozone, as well as to improve other environmental effects such as atmospheric visibility. The proposed regulation does include emissions standards which will reduce the emissions which contribute to the formation of these pollutants. It also includes a sulfur content limit of 0.05% for diesel fuels used in generators. Low sulfur diesel is beneficial since it will, by itself, achieve significant particulate matter and sulfur dioxide emission reductions, enabling the environmental benefits to begin accruing quickly. Current off-road diesel fuels have allowable sulfur contents in Delaware of up to 0.3%, and the new federal standard of 0.05% will not go into effect until June 2007. However, 0.05% diesel fuel is currently being produced and widely distributed, for both on road and off-road purposes, with much lower sulfur content fuels also readily available. During the development of the proposed regulation, AQM staff spoke with various fuel distributors who stated that the cost difference between diesel fuel with 0.05% sulfur and diesel fuel with a higher sulfur content (0.2-0.3%) is only a few pennies per gallon (as of September 2004). The EPA even performed a cost analysis (in the final Clean Air Nonroad Diesel Rule, (69 FR38958-39273, June 29, 2004) to estimate the increased cost of lowering the sulfur content of off-road diesel fuel to 0.05% in June 2007. The EPA’s estimated increase in the cost of diesel for the East and Gulf Coasts was approximately 5%.

The Department understands that, while the emissions standards in the proposed regulation demand technological improvement, generators are available now that are capable of meeting the proposed nitrogen oxides standards for new distributed generators. The development of the RAP Model Rule focused on this issue and involved an extensive review of available distributed generator technologies and standards applied by other regulatory agencies, including information available from the U.S. Department of Energy and the California Air Resources Board. The three-step phase-in of the nitrogen oxide standards in the RAP Model Rule was also developed to address the technological challenges of distributed generator manufacturers and provides specific

emission levels and time goals to focus technological improvement. An increase in the number of generators capable of operating in compliance with the proposed emissions standards is likely, in part due to the incentive created by similar state regulations based on the RAP Model Rule under development, or finalized, in the Mid-Atlantic and Northeastern U.S. Finally, the level of the proposed standards received detailed consideration in both the RAP Model Rule development and the development of Regulation No. 1144; the standards were developed to strike a balance among the need for air quality maintenance and improvement, electric supply considerations and emissions from current and developing distributed generator technology and control equipment.

The proposed regulation requires generator owners to keep very minimal records related to operating hours, fuel use, and fuel specifications. Records of monthly and yearly operating hours for the entire universe of generators is considered to be very beneficial information that will assist AQM to better understand how often emergency or distributed generators are used. Further, records of monthly and yearly fuel usage will help AQM estimate the emissions from generators, especially during the summer ozone season, but also year-round for particulate matter. These records will help AQM better estimate the total impact of generator emissions on Delaware's air quality, and will help the Department judge the performance of the Regulation in the future.. However, the proposed regulation does not require generator owners to submit any records on a set schedule, but only retain such records and supply these records when requested by the Department.

Thus, it is the Department's response that the proposed regulation not be revised as a result of the comment above.

Comment 10: Mr. Jann comments that “the proposed regulation is applicable to all stationary generators, both new and existing, with no lower size applicability limit (deminimis).” He continues to state that “the extremely low emission limits combined with the lack of emission limit differentiation based on age and capacity will impose unattainable and unjustified limitations on sources, essentially eliminating the ability to use stationary generators in any manner other than as emergency generators.” Mr. Jann suggests, “Should this regulation proceed, the emission limits should be modified to more reasonably attainable levels with recognition of the capabilities of controlling smaller and older units.”

Response 10: The emissions standards applicable to new distributed generators proposed in Section 3.2.2.1 are technically and economically feasible. The emissions standards for these generators can be met by advanced, lean-burn natural gas engines without aftertreatment and also by rich-burn natural gas engines and diesel-fueled engines with the addition of NO_x aftertreatment. In addition, the standards proposed for 2008 and 2012 require emissions reductions which are in line with industry research and technology development goals that will reduce emissions and improve efficiency in an economically feasible manner. The emissions standards also are in alignment with recently proposed or finalized emissions standards for non-emergency generators in other states. For example, Pennsylvania recently adopted NO_x emissions standards for large stationary engines in non-attainment areas. Pennsylvania Chapters 129 and 145 establish allowable NO_x emissions levels for large gaseous-fueled, spark-ignited engines of 9 lb/MWh, and 7 lb/MWh for diesel-fueled engines. In addition, under a recently proposed general permit standard for diesel-fueled engines that do not need a permit, NO_x

emissions from such engines would have to achieve an 80% reduction if the engines exceeded a certain amount of operating hours per year. Also, under a currently proposed regulation in the State of New Jersey, NO_x standards for reciprocating engines would be established at 2.2 lb/MWh. Both Connecticut and Maine have recently adopted similar regulations based on the Regulatory Assistance Project's Model Rule, as is Delaware's proposed regulation, which have NO_x standards for new distributed generators of 0.6 lb/MWh and 4.0 lb/MWh, respectively (compared to 2.2 lb/MWh in the proposed regulation). The proposed regulation does include the 4.0 lb/MWh NO_x standard, but it applies to existing, distributed generators. The EPA estimates that uncontrolled diesel engines emit NO_x at a rate of about 32-42 lb/MWh, which is higher than that for uncontrolled gaseous engines. This means that an existing, distributed, diesel generator would have to achieve an approximate 90% reduction in NO_x to meet the standard in the proposed regulation. Technology such as SCR can achieve this 90% reduction, and is presently being used on a wide range of engine applications to reduce their emissions.

The comment that the regulation has "no lower size applicability limit," is not accurate. Section 1.2.1.4 clearly includes an exemption from the proposed regulation for "a generator with a standby power rating of 10 kW or less."

Thus, it is the Department's response that the emissions standards of the proposed regulation should not be revised, nor should the *de minimis* applicability limit of 10 kW be revised.

Comment 11: "DuPont also strongly disagrees with the precedent-setting inclusion of carbon dioxide (CO₂) as a regulated pollutant as part of the emission standards proposed in this regulation. DuPont strongly recommends that DNREC delete the carbon dioxide performance standard contained in this proposed regulation...."

Response 11: See *Response 2*, above, regarding the Department's response to comments concerning CO₂.

Comment 12: Mr. Jann comments, "Paragraph 5.2 of the proposed regulation requires no more than ten grains total sulfur per 100 dry standard cubic feet [for gaseous fuels combusted in a generator]. This provision should be revised to exempt units firing pipeline quality natural gas. Generator owners/operators have no control over the sulfur level of pipeline quality natural gas. This provision should only apply for gaseous fuels other than pipeline quality natural gas."

Response 12: In prior discussions with a local gas company in Dover, DE, AQM staff was informed that the proposed sulfur content limit for gaseous fuels is absolutely achievable. In fact, it was suggested by the gas company that a more appropriate, and still achievable, sulfur content limit for gaseous fuels would be 1.0 grain total sulfur per 100 dry standard cubic feet. "Pipeline natural gas" is defined in 40 CFR 72.2 as having "0.5 grains or less of total sulfur per 100 standard cubic feet." It is true that generator owners have no control of the sulfur level of pipeline quality natural gas which they may be using to operate their generators, but the sulfur level in pipeline natural gas is, by definition, well below the propose standard of 10 grains total sulfur per 100 dry standard cubic feet. Thus, it is the Department's response that Section 5.2 of the proposed regulation should not be revised.

Comment 13: Mr. Jann comments, “In addition, waste, landfill, or digester gases are required to contain less than 1.5 grains of hydrogen sulfide per 100 dscf or 30 grains total sulfur compounds per 100 dscf. Any emission limits should be established with flexibility to allow constructive use of these nonfossil energy sources without requiring expensive gas cleanup systems prior to combustion.

Response 13: The commenter probably was reviewing a prior draft and not the proposed regulation when making this comment. Section 5.3 of the proposed regulation states that waste, landfill, or digester gases combusted in a generator shall contain no more than 10 grains total sulfur per 100 dry standard cubic feet, which is the same standard proposed in Section 5.2 for all other gaseous fuels. However, Section 5.3 of the proposed regulation states that “an alternative total sulfur limit for waste, landfill, or digester gases shall be allowed based upon a case-by-case determination.”

The Department recognizes that waste gas streams may not provide high quality fuels with consistent compositions that are characteristic of pipeline natural gas. Waste gas fuels are highly variable and can include numerous contaminants; however, sulfur abatement systems are available which can reduce the sulfur content of landfill gas by removing hydrogen sulfide (H₂S). Although sulfur abatement systems are available, the Department does not believe the removal of sulfur in landfill gas must be the limiting factor in the environmentally preferable practice of using waste gas streams as fuel. Thus, it is the Department’s response that Section 5.3 of the proposed regulation should not be revised, since the proposal allows for an alternate sulfur content of waste fuels, based upon a case-by-case need.

Comment 14: Mr. Jann comments that Section 8.3 of the proposed regulation could “drive [the] installation of renewable generation in locations that are non-optimum for those technologies. Efforts should focus on installation of those resources in locations that can enhance their output rather than on locations that are procedurally expedient.”

Response 14: Non-emitting resources (or renewable energy technologies), such as wind and solar energy, are constantly replenished and will never run out. Non-emitting resources prevent pollution by displacing the use of fossil fuels to provide energy. They also do not just reduce emissions from one pollutant or class of pollutants – they displace all emissions associated with the displaced energy generation, including nitrogen oxides, sulfur dioxide, mercury and other metals, carbon monoxide, and carbon dioxide. On-site non-emitting resources can also provide significant energy cost savings at the point of installation, especially for the end-use consumer. While a generator owner may install a non-emitting resource because it is “expedient” to do so, the benefits listed above will still be realized. Reducing pollution and the use of fossil fuels to provide energy benefits everyone, regardless of how large or small the project is. Thus it is the Department’s response that Section 8.3 of the proposed regulation should not be revised.

Commenter: Andrew R. Vahey; Delmarva Power & Light (DP&L); August 31, 2005

Comment 15: “DP&L asks that the Department also exempt Mobile generators in times of emergency generation in Reg. 1102 as well. The Department should clarify that mobile

generators, regardless of standby power rating should be exempt from Reg. 1102 permitting.”

Response 15: Regulation No. 1102, “Permits,” establishes the procedures that satisfy the requirement of 7 Del. C. Chapter 60 to report and obtain approval of equipment which has the potential to discharge air contaminants into the atmosphere. Regulation No. 1101, “Definitions and Administrative Principles,” defines those “stationary sources” which are subject to permitting as:

“any fixed building, structure, facility, installation, equipment or any motor vehicle, waterborne craft, aircraft or diesel locomotive deposited, parked, moored, or otherwise remaining temporarily in place, which emits or may emit any air contaminant.”

As defined, a mobile generator would be considered a stationary source and be subject to the permitting requirements of Regulation No. 1102. The proposed amendments to Regulation No. 1102 clarify the permitting requirements for stationary generators, in part by exempting a potentially large number of generators from requiring a permit to be constructed or operated. It is imperative to understand that the reference to a stationary generator in the proposed amendments is referring to a stationary generator as defined in the proposed Regulation No. 1144. Even though these generators are not required to have a permit, they must still comply with all applicable requirements of the proposed Regulation No. 1144, or any other application regulations. The proposed amendments to Regulation No. 1102 also exempt any internal combustion fuel burning equipment, which is not a stationary generator, from requiring a permit if its engine is rated at 450 hp or less. This proposed provision (hh.) would allow a mobile generator to be constructed or operated without a permit, if its engine size is small enough. Additionally, this latter provision does not specify that the internal combustion equipment be used for emergency or non-emergency purposes, so it would apply to equipment regardless of the use. Thus, it is the Department’s response that the proposed amendments to Regulation No. 1102 not be revised since they will allow various mobile generators to be exempt from the permitting requirements of Regulation No. 1102.

Comment 16: “Given the...constraints [related to verifying a generators emissions under Section 7.3, which DP&L outlines in its letter], DP&L believes that a registration time extension of six months from the effective date of the Regulation (in lieu of the three months prescribed in the Proposal) is warranted for existing emergency generators.”

Response 16: In regards to the comment about the “registration information” that is required by Section 7.3 of the proposed regulation; this information is actually required to be submitted to the Department for compliance purposes, not for registration purposes. The various types of data or information listed in Section 7.3 are examples of materials which may be submitted to the Department for generator owners to verify that their generators are compliant with the proposed regulation. This information must be submitted by the applicable compliance date listed in Section 1.3 of the proposed regulation, which for existing, emergency generators is within three months after the effective date. As it was noted in *Response 7* above, the regulation development process began in July 2003, and the Department has provided potentially affected sources with extensive notifications about the regulation development process and about the potential requirements of the proposed regulation. Existing, emergency generators owners have had sufficient time to begin evaluating their generators in order to verify their compliance with the

requirements of the proposed regulation once it is finalized. Regarding the specific “constraints” detailed in the comments which a business may face in gathering data to verify a generator’s compliance:

- businesses likely have an adequate existing database of equipment such as generators;
- *Response 17*, below, details the reasons why it behooves generator owners to have non-resettable hour meters installed, and how simply they are to procure and install; and
- diesel fuel with a sulfur content of 0.05% (and even much lower) is readily available, and the proposed regulation provides ample time for a business to procure a new supply, if necessary.

Thus, it is the Department’s response, that the compliance date for existing, emergency generators in the proposed regulation not be revised.

Comment 17: “DP&L also request that the use of existing emergency generators not equipped with a non-resettable hour meters remain permissible provided that a thorough run-time logbook is maintained in lieu of a non-resettable hour meter.”

Response 17: Section 6.1.2 of the proposed regulation specifies that a generator owner shall record its monthly and yearly operating hours. Section 6.1.2 stipulates that a non-resettable hour metering device be used to accomplish this recordkeeping, in order to help owners keep track of the hours of operation for their generators. Instead of having to remember the startup and shutdown times of a generator and adding up all of the hours in a month, an owner would only have to look at the hour meter and subtract the previous month’s total from the current month’s total in order to determine the actual hours of operation for the current month. The requirement for the hour meter to be “non-resettable” is also beneficial to the owner in that it eliminates the possibility of the hour meter being accidentally reset and ensures that the operating hours are continuously being totaled. Owners can certainly choose to install a “non-resettable” hour meter in addition to a resettable one to satisfy this requirement.

After researching the specifications of new generators and speaking with various generator manufacturers, it has been determined that most new, and recently manufactured, generators have an hour metering device installed by the manufacturer. If not, an hour metering device can be easily installed on a generator, and can be obtained through suppliers or distributors of generators or through local parts stores for on-road or off-road vehicles. These aftermarket hour meters are easy to install, even by the average homeowner, and can be installed on most types of engines. As for the cost of the hour metering device, it has been found that the typical price of an analog hour meter is less than \$50. Thus, it is the Department’s response that Section 6.1.2 of the proposed regulation not be revised.

Comment 18: “DP&L does not believe that the Department has the authority to regulate CO₂ emissions from such facilities. Based upon the above provided information [outlined in DP&L’s letter] DP&L respectfully requests that DNREC withdraw the proposed regulation of CO₂ emissions from this Proposal.”

Response 18: See *Response 2*, above, regarding the Department’s response to comments

concerning CO₂.

Comment 19: “DP&L requests that the definition [of “emergency”] be revised to clearly reflect the intent of the regulation to allow the owner of the electric grid to be included in the definition of “Emergency,” and that such owner is entitled to any exemptions under proposed Reg. 1144.”

Response 19: The definition of “emergency” in Section 2.0 of the proposed regulation defines the various scenarios which qualify as an emergency, and therefore, when an emergency generator may be operated. An “emergency generator” is defined as a stationary generator which is only used for emergency, testing, or maintenance purposes. Section 4.1 of the proposed regulations allows an emergency generator to operate for an unlimited number of hours during an emergency. No parts of these definitions or sections indicate that only specific generator owners may operate their generators during an emergency. The Department recognizes the need for emergency generators when there are power outages due to various “unintentional” reasons. Regardless of whom the generator owner may be, the Department is not intending to restrict their primary function of providing emergency, backup power during these occasions. Again, it is imperative to understand that the installation of an emergency generator is to avoid financial loss, not to provide financial gain. Thus, it is the Department’s response that the definition of “emergency” in the proposed regulation not be revised.