

NRG Energy, Inc.
8301 Professional Pl.
Landover, MD 20785

January 31, 2014

Mr. George S. Aburn, Jr.
Director, Air & Radiation Management Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Re.: Comments on Draft MD Air Regulation for NOx Emissions - COMAR 26.11.38

Dear Mr. Aburn:

NRG Energy, Inc., (“NRG”) is pleased to offer its comments on new draft air regulations being developed by the Maryland Department of the Environment (“MDE”). The NOx portion of the draft regulation is labeled COMAR 26.11.38 and was released for comment on December 11, 2013 (the “Draft Regulation”). Through its subsidiaries, NRG owns and operates the Chalk Point, Dickerson, Morgantown, and Vienna facilities (the “Maryland Stations”) in Maryland. NRG’s Maryland Stations are located in Charles, Montgomery, Prince George’s, and Dorchester counties and employ approximately 450 people.

These generating stations include seven coal fired generating units totaling 2,500 MW. NRG believes that these regulations can be structured in such a way as to achieve MDE’s stated objective of reducing short term, peak-day NOx emissions while providing a reasonable opportunity for coal units that have substantial back end controls the potential to operate economically and support Maryland’s energy needs.

NRG’s Maryland stations have complied with the Maryland Healthy Air Act, and have installed emissions controls costing over \$1.6 billion. If any of the controlled units at the Maryland stations are forced to shut down because of the Draft Regulations, replacement generation may come from an upwind source that does not utilize the level of emission controls at the Maryland Stations, thus resulting in the unintended consequence of worsening Maryland’s air quality.

In order to provide the level of operating flexibility that is critical to meeting the PJM system operator’s reliability needs, while minimizing environmental impacts on the days on which air quality is most at risk in Maryland, NRG urges MDE to incorporate a mass-based limitation for Affected Electric Generating Units¹ instead of a rate-based limit, on a generator-owner portfolio average basis. NRG does not support either the 24-hour rolling average or 30-day rolling lb/MBtu

¹ Term is defined in the Draft Regulation.

average rate-based limit for NO_x that is currently proposed in the Draft Regulations. NRG's proposal, a mass-based approach which is detailed below, will achieve MDE's goals yet will not put the continued operation of already controlled facilities at greater risk of shutdown. The mass-based approach provides several advantages to the rate-based compliance standard of the Draft Regulation:

- Avoids undesirable outcomes associated with short term rate-based limits. For example, with a lb/MBtu rate limit applied on a portfolio-wide basis, if a well-controlled unit trips offline for any reason, other units in the portfolio would likely be forced offline immediately to comply with the rolling 24 hour standard of the Draft Regulation. This result could cause reliability problems on the electrical system if it occurs on a high generation day or on a day when other contingencies have occurred on the electric system. Conversely, with the tonnage limit that NRG is proposing, the emissions reduction that occurs when a unit trips offline would help the balance of the generating portfolio comply with the standard.
- A mass-based limit also eliminates the need for the minimum load or "low capacity operation" provision that is currently included in the Draft Regulation. Start up, shut down, and minimum loads are all low-mass emission scenarios that could be included within a mass cap. NRG does recommend, however, that a control equipment malfunction provision be included in the Draft Regulations, particularly for the SO₂ regulation, so that an unplanned but limited duration equipment issue would not adversely impact system reliability. As a mitigating measure during an equipment malfunction, the Draft Regulations should require the malfunctioning unit to go to a reduced load level until the malfunction is corrected. As currently written in the Draft Regulation, the "low capacity operation" provision creates an option for uncontrolled units to operate irrespective of air quality concerns.

Regardless of whether the limit used is mass-based or rate-based, NRG strongly believes the Draft Regulation must include an exemption for declared PJM Interconnection Maximum Emergency Generation events that would allow individual units to be dispatched to maximum load if PJM declares such an emergency condition. This exemption would occur infrequently and would allow affected units to respond to PJM directives during emergency situations. Attachment A to this letter includes the section of the PJM Emergency Operations Manual (M13) that describes the steps that PJM implements during these emergency situations. NRG believes that it is prudent for Maryland to include provisions in the Draft Regulation that provide this critical backstop. Without such a provision, PJM could be forced to implement rolling brownouts, or dispatch high-emitting, uncontrolled units in bordering states.

We also propose that this regulation be operative only when air quality is expected to be poor. The Draft Regulation should require that a tons per day limit to go into effect when the day-ahead modeled forecast predicts poor air quality the next day. Forecast modeling is sufficiently advanced that "false positives", instances where actual air quality does not exceed the air quality standards as predicted, have become the exception rather than the rule. In order for generators to structure their energy bids in the PJM day-ahead market by the noon deadline, the air quality forecast must be published by 10:00 am on the previous day. Between noon and 4 pm, PJM evaluates the next day generation offers to schedule the appropriate units to meet system load demands reliably. Between 4 pm and midnight, generators would make necessary preparations for alternative modes of operation. Under this approach, the 24 hour calendar day average tonnage cap would be the

only limit needed; the 30-day rolling limit would not be required because the objective of reducing emissions on peak ozone days would be met.

A calendar day limit, as opposed to rolling 24 hour limit, is a more effective way of achieving Maryland's clean air goals, particularly when coupled with the use of effective forecast modeling. If the forecast calls for the Draft Regulation to be in effect (an "action day") the following day, the beginning and end of the compliance period needs to be clearly established. An "action day" should constitute a period from midnight to midnight which would align the additional measures to be undertaken by affected units with air quality episodes – periods where peak ambient air quality readings occur. A calendar day limit is more easily enforced, and will avoid any confusion over when an action day begins. Potential measures that generating units could take on "action days" include maximizing the performance of SCRs, switching fuels (different coals or use of natural gas), or curtailing operations.

Using the approach described above, NRG believes that a longer-term limit such as a 30-day rolling is not necessary to meet MDE's goals. However, if a longer term limit is deemed necessary to ensure effective use of installed controls, a less stringent 30-day rolling tonnage cap could be established to ensure that units with controls operate those controls during a particular period, such as the core summer months, which are generally the height of the ozone season (June-July-August). Therefore, the regulation could impose a 30-day rolling system wide tonnage cap during the summer months, and a 24 hour calendar day system wide tonnage cap on select "action" days when the air quality is forecasted to necessitate such a cap.

Finally, if additional control technology is required to comply with the regulation, setting the implementation date far enough out in the future and aligning it with the date that generators have already committed their units into the PJM capacity market is most appropriate (e.g. June 1 of a given year instead of January 1, because the annual PJM capacity auction commits units to a one-year period from June 1 through May 31, three years after the auction year).

Thank you for your consideration of our recommendations. If you have any questions concerning this information, please contact me at (301) 955-9168 or by email at david.cramer@nrgenergy.com.

Sincerely,



David S. Cramer
Director, Environmental
NRG Energy – PJM South

Attachment A
PJM Emergency Operations - Manual 13

2.3 Capacity Shortages

PJM is responsible for declaring the existence of an Emergency, and for directing the operations of the PJM Members as necessary to manage, alleviate, or end an Emergency. PJM also is responsible for transferring energy on the PJM Members' behalf to resolve an Emergency. PJM is also responsible for executing agreements with other Control Areas interconnected with the PJM RTO for the mutual provision of service to meet an Emergency.

Exhibit 1 illustrates that there are three general levels of emergency actions for capacity shortages:

- Alerts – issued day-ahead
- Warnings – issued real-time
- Actions – issued real-time
- PJM actions are consistent with NERC and RFC EOP standards.

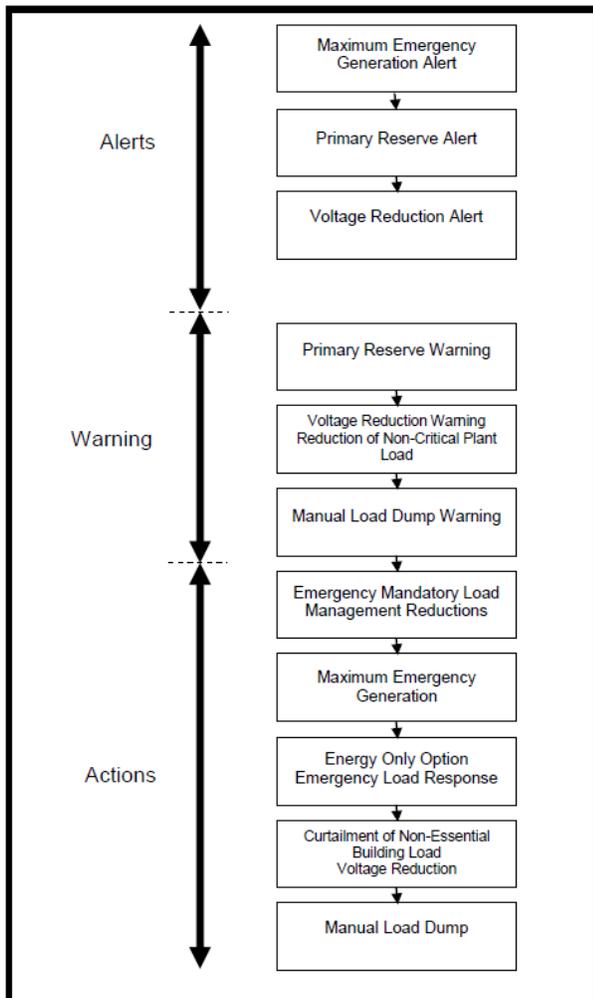


Exhibit 1: Emergency Levels

Exiting emergency procedures are achieved in a controlled, deliberate manner so as to not adversely affect system reliability, while minimizing the impact of these emergency actions on the LSE's customers. PJM members are expected to implement all emergency procedures immediately to achieve the desired relief within 30 minutes unless otherwise directed. PJM dispatcher has the flexibility of implementing the emergency procedures in whatever order is required to ensure overall system reliability. PJM dispatcher has the flexibility to exit the emergency procedures in a different order than they are implemented when conditions necessitate.

PJM strives to meet customer energy demands either through the use of available generating resources, power purchases from PJM Members, or through the use of planned load management programs. If customer demand cannot be met, Emergency actions, such as voltage reductions, and as a last resort, manual load shedding, are used.

During unconstrained operations, PJM Control Zones will jointly implement Emergency Procedures up to the point of a Manual Load Dump Action. Prior to the implementation of a Manual Load Dump Action, PJM dispatch will review each PJM Control Zone energy / reserves calculation to determine their relative level of capacity deficiency (reserves evaluated via PJM EMS system). If all PJM Control Zones are capacity deficient, Manual Load Dump Actions will be implemented proportionally, based on the level of shortage, otherwise only the deficient Control Zones will be required to shed load.

Transmission constraints may result in PJM dispatch implementing emergency procedures, including load dump, on a Control Zone specific basis or a subset of a Control Zone.

PJM Definitions And Acronyms – Manual 35

Manual Load Dump : The removal of electric load from a system by manually opening the breakers.

Primary Reserve: Reserve capability that can be converted fully into energy within 10 minutes from the request of PJM. Current approved value for this objective is 1,700 MW.