



**Monitoring
Analytics**

Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleview, PA 19403
Phone: 610-271-8050
Fax: 610-271-8057

VIA EMAIL

April 8, 2022

Alice A. Previte, Esq.
Office of Legal Affairs
New Jersey Department of Environmental Protection
401 East State, Street, 7th Floor
Trenton, NJ 98625-0402

Re: DEP Docket No. 07-21-11 and Proposal Number: PRN 2021-117

Dear Ms. Previte:

Attached please find comments of Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM. This filing is below the character count for comments ordinarily submitted by email. However, this filing contains a chart that would be readable if filed as text only.

Sincerely,

Jeffrey W. Mayes
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Eagleview, Pennsylvania 19403
(610) 279-8053
Jeffrey.Mayes@monitoringanalytics.com

MONITORING ANALYTICS, LLC
2621 Van Buren Avenue, Suite 160
Eagleville, PA 19403

**BEFORE THE NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

Control and Prohibition of Carbon Dioxide)	Docket No. 07-21-11
Emissions (Rule 7:27F))	Proposal No. PRN 2021-117
)	

COMMENTS OF THE INDEPENDENT MARKET MONITOR FOR PJM

Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor (“Market Monitor”) for PJM Interconnection, L.L.C. (“PJM”), submits these comments on the New Jersey Department of Environmental Protection’s (“DEP”) proposed new rule N.J.A.C. 7:27F (“Rule 7:27F”), and to the proposed amendments to rules N.J.A.C. 7:27-1.4, 1.36, 8.14, 8.18, 22.16, and 22.28; and 7:27A-3.2, 3.5, and 3.10. Rule 7:27F would limit carbon dioxide (CO₂) emissions from existing and new fossil fuel-fired electric generating units in New Jersey through the application of emissions limits.

PJM is an independent Regional Transmission Organization, regulated by the Federal Energy Regulatory Commission (FERC), responsible for ensuring reliable power delivery across the bulk electric system for all or part of 13 states and the District of Columbia, including the entire state of New Jersey.

The Market Monitor is an independent entity established by the FERC in order to monitor market participant and PJM conduct, recommend improvements to the market design, and report on the performance of PJM markets. The Market Monitor is an

independent advocate for competitive markets and the public interest. The Market Monitor's independence includes independence from PJM, PJM stakeholders and FERC.¹

The Market Monitor agrees with PJM's recommendation that the proposed January 1 compliance deadlines (2024, 2027 and 2035) be aligned with the June 1 start of PJM Planning Periods, which define the obligation period of capacity resources in the PJM Capacity Market. Use of corresponding deadlines would support the effective and competitive operation of the PJM Capacity Market. Use of the corresponding deadlines would permit the retirement of units that cannot meet the emissions limits and the addition of units that can meet the emissions limits, based on a competitive market.

Rule 7:27F includes three tiers that would limit the amount of CO₂ per MWh produced for existing units. Tier 1, effective in 2024, limits pollution from generators to a rate of 1,700 lb/MWh on a 12 month rolling average basis. Tier 2, effective in 2027, limits CO₂ to 1,300 lb/MWh on a 12 month rolling average basis. Tier 3, effective in 2035, limits CO₂ to 1,000 lb/MWh on a 12 month rolling average basis. The limit for new generators would be 860 lb CO₂/MWh.

The CO₂ emission rate of an electric generating unit is a function of (i) the fuel used, (ii) the efficiency of the generator and (iii) the output level of the generator. Table 1 shows the average CO₂ emission rates in lb/MWh for combined cycle generating plants and combustion turbine generating units that would result from burning defined proportions of natural gas and oil for a range of heat rates. In Table 1, the values in white are the unit types, heat rates and proportion of oil and gas that will not be able to meet the tier 1 limit of 1,700 lb/MWh. The values in red are the unit types, heat rates and proportion of oil and gas that will be able to meet the tier 1 limit but not the tier 2 limit of 1,300 lb/MWh. The values in

¹ For a review of the PJM markets and associated issues, see the *2021 State of the Market Report for PJM*, (March 10, 2022) which can be accessed at <http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2021.shtml>.

yellow are the unit types, heat rates and proportion of oil and gas that will be able to meet the tier 2 limit but not the tier 3 limit of 1,000 lb/MWh. The values in green are the unit types, heat rates and proportion of oil and gas that will be able to meet the tier 3 limit. For example, all highly efficient combined cycles (with a 6 MMBtu/MWh heat rate) will be able to meet the tier 3 limit of 1,000 lb/MWh burning either gas or oil, but the least efficient combined cycles (with an 8 MMBtu/MWh heat rate) will only meet the tier 3 limit of 1,000 lb/MWh when burning oil for less than or equal to 50 percent of their output.

Table 1 Average CO₂ emission rates in lb/MWh by technology, heat rate and fuel source²

Fuel Share		Heat Rates (MMBtu/MWh)						
		Combined Cycles			Combustion Turbines			
Oil	Gas	6	7	8	9	11	13	15
0%	100%	700	817	933	1,050	1,283	1,516	1,750
25%	75%	770	898	1,027	1,155	1,412	1,669	1,925
50%	50%	840	980	1,120	1,260	1,541	1,821	2,101
75%	25%	911	1,062	1,214	1,366	1,669	1,973	2,276
100%	0%	981	1,144	1,308	1,471	1,798	2,125	2,452

Table 1 illustrates the fact that defining emissions limits based on average annual emission rates may create unintended incentives for dual fuel generators. For example, a CC with a heat rate of 8 MMBtu/MWh can stay below the 1,000 lb/MWh limit as long as it operates 82 percent of the time on natural gas on an annual basis. This means that the unit would be allowed to burn oil for one hour for approximately every 5.5 hours it burns natural gas. As a result, the more the unit runs on natural gas, the more it would be permitted to run on oil. This creates an incentive to run more hours on natural gas in order to create the option to increase the hours that the unit can run on oil. Both could increase emissions compared to an efficient, competitive outcome.

² The Market Monitor assumes a 116.65 lb/MMBtu CO₂ emission rate on natural gas and 163.45 lb/MMBtu CO₂ emission rate on oil. Source: <https://www.eia.gov/environment/emissions/co2_vol_mass.php>.

There are alternative designs for emissions limits that would not have this incentive effect. The Market Monitor provides this information in order to help inform the DEP in meeting its goals.

The Market Monitor respectfully requests that the Department of Environmental Protection accept and consider these comments.

Respectfully submitted,



Jeffrey W. Mayes

Joseph E. Bowring
Independent Market Monitor for PJM
President
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Eagleville, Pennsylvania 19403
(610) 271-8051
joseph.bowring@monitoringanalytics.com

General Counsel
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Eagleville, Pennsylvania 19403
(610) 271-8053
jeffrey.mayes@monitoringanalytics.com

Joel Romero Luna
Senior Analyst
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Eagleville, Pennsylvania 19403
(610) 271-8050
joel.luna@monitoringanalytics.com

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