



2750 Monroe Boulevard
Audubon, PA 19403-2497

Steven R. Pincus
Associate General Counsel
Phone (610) 666-4370 | Fax (610) 666-8211
steven.pincus@pjm.com

January 26, 2023

The Honorable Jennifer Granholm
Secretary of Energy
United States Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Re: Order No. 202-22-4, Report of PJM Interconnection, L.L.C.

Dear Secretary Granholm:

Pursuant to Order No. 202-22-4 issued by the Department of Energy (“DOE” or “Department”) on December 24, 2022 (the “Order”), paragraphs E and F, PJM Interconnection, L.L.C. (“PJM”) submits the following report on (i) all dates between December 24, 2022, and December 26, 2022, inclusive, on which the Specified Resources were operated, the hours of operation, and exceedance of permitting limits, including sulfur dioxide, nitrogen oxide, mercury, carbon monoxide, and other air pollutants, as well as exceedances of wastewater release limits;¹ (ii) PJM’s actions taken to comply with the requirements that PJM take reasonable measures to inform affected communities where all Specified Resources operate that PJM has been issued the Order;² and (iii) updates to information previously reported by PJM under the Order, and responses to questions from DOE staff.

I. Background

On December 24, 2022, pursuant to Section 202(c) of the Federal Power Act (“FPA”) and part 205, subpart W, of the regulations of the Department PJM submitted a request (the “Request”) that the Secretary of Energy (“Secretary”) find that an electric reliability emergency exists within the PJM Region that requires intervention by the Secretary, in the form of a Section 202(c) emergency order, to preserve the reliability of the bulk electric power system. PJM requested that the Secretary issue the order immediately, effective December 24, 2022, authorizing all electric generating units located within the PJM Region to operate up to their maximum generation output levels under the limited circumstances described in the Request, notwithstanding air quality or other permit limitations. The generating units (“Specified Resources”) that the Order pertains to are listed on the Order 202-22-4 Resources List, listed in Attachment A to the Request, as updated in accordance with the Order.³

On December 24, 2022, the Department issued the Order granting PJM’s Request. The Department determined that an emergency existed in the electricity grid operated by PJM due to a

¹ Order at paragraph E.

² Order at paragraph F.

³ The Specified Resources are posted on www.energy.gov.

shortage of electric energy, a shortage of facilities for the generation of electric energy and other causes, and that issuance of the Order will meet the emergency and serve the public interest. Given the nature of the emergency, the Department determined that additional dispatch of the Specified Resources is necessary to best meet the emergency and serve the public interest for purposes of FPA section 202(c). In line with the anticipated circumstances precipitated by the cold weather event, the Order was limited to the period beginning with the issuance of the Order on December 24, 2022 through 12:00 pm Eastern Time on December 26, 2022.

Because the additional generation may result in a conflict with environmental standards and requirements, the Secretary authorized only the necessary additional generation on the conditions contained in the Order, with reporting requirements as described in the Order, including this report.

II. Report

a. Report on All Dates on Which the Specified Resources Were Operated.

The Order requires that by January 26, 2023, PJM report all dates between December 24, 2022, and December 26, 2022, inclusive, on which the Specified Resources were operated, the hours of operation, and exceedance of permitting limits, including sulfur dioxide, nitrogen oxide, mercury, carbon monoxide, and other air pollutants, as well as exceedances of wastewater release limits.⁴ In compliance with these directives, the following information is provided in consultation with Calpine Corporation (“Calpine”), the owner of the Specified Resources operated under the terms of the Order:

Two generating units owned by Calpine ran under the Order’s allowances at levels that exceeded their permitting operating hour limits for a small number of hours. Those generators were:

- Bethlehem Energy, a dual-fuel natural gas/fuel-oil unit (1,130 MW) located in Bethlehem, PA 18015; and
- York Energy 1, a dual-fuel natural gas/fuel-oil unit (565 MW) located in Peach Bottom Township, PA 17314.⁵

For the period that PJM was on Energy Emergency Alert (EEA) Level 2 and consistent with the Order,⁶ the operating hours for Bethlehem Energy Center Blocks 1 and 2, and the operating hours and fuel oil consumption for York Energy Center 1 were exceeded in reliance on the Order. Bethlehem’s oil operating hour limit is 108 hours for all 6 Combustion Turbines (CT) per calendar day. The Bethlehem facility exceeded the oil operating hours limit by 14.61 hours (or 2.435 hours per CT), which began on 12/24/2022 19:18 thru 21:50 (HE20 – HE22). The generation MWh associated with this timeframe are as follows:

⁴ Order at paragraph E.

⁵ In part c below, PJM updates the information on the units identified on December 25, 2022, in PJM’s daily notice.

⁶ Order at paragraph B (i).

Bethlehem 1 (3 CTs)		<u>Allocated MWh</u>
	HE20	290.18 (allocated generated MWh from 19:18 using 5-min interval values)
	HE21	365.92 (entire generated MWh)
	HE22	248.71 (entire generated MWh)
	Total	904.81 MWh

Bethlehem 2 (3 CTs)	HE20	284.19(allocated generated MWh from 19:18 using 5 min interval values)
	HE21	360.88 (entire generated MWh)
	HE22	250.63 (entire generated MWh)
	Total	895.7 MWh

York Energy Center block 1's oil operating hours limit is 59.5 hours combined for all 3 CTs, while its fuel oil consumption limit is 612.85 Kgal for a calendar day. York 1 exceeded both its operating hours limit and fuel oil consumption limit. The operating hours limit was exceeded by 6.23 hours (or 2.076 hours per CT), which started on 12/24/2022 19:50 – 22:00 (HE20- HE22), while the fuel oil consumption limit was exceeded by 44.61 Kgal, which started on 12/24/2022 at approximately 20:39 - 22:00 (HE21-HE22). Since the operating hours limit was eclipsed at 19:50 (HE20), about 50 minutes earlier than fuel oil consumption at 20:39 (HE21), the generation MWh associated with the operating hour exceedance are as follows:

York 1 (3 CTs)		<u>Allocated MWh</u>
	HE20	86.36 (allocated generated MWh from 19:50 using 5-min interval values)
	HE21	517.96 (entire generated MWh)
	HE22	390.98 (entire generated MWh)
	Total	995.30 MWh

Neither Bethlehem nor York 1 exceeded its permit limits on CO, NO_x, PM₁₀, VOC, or SO₂.

b. Report on Measures to Inform Affected Communities Where all Specified Resources Operate that PJM has Been Issued the Order.

Paragraph F of the Order directed PJM to “take reasonable measures to inform affected communities where all Specified Resources operate that PJM has been issued this Order, in a manner that ensures that as many members of the community as possible are aware of the Order, and explains clearly what the Order allows PJM to do. At a minimum, PJM shall post a description of this Order on its website (with a link to this Order) and identify the name, municipality or other political subdivision, and zip code of Specified Resources covered by this Order, as the Specified Resources may be updated.”⁷ As directed PJM includes in this report the following description of the actions taken to comply with Paragraph F of the Order:

⁷ Order at paragraph F.

- On December 24, 2022, at approximately 19:31, PJM posted the order on PJM’s website. The PJM website includes a brief description of the Order. The posting of the Order was communicated to all PJM Stakeholders providing the following notification:

On December 24, 2022, the Department of Energy (DOE) issued an emergency order (“Emergency Order”) pursuant to Section 202 of the Federal Power Act determining that an electric reliability emergency exists within the PJM Region that requires intervention by the Secretary to preserve the reliability of the bulk electric power system. As set forth in the attached, the order is effective December 24, 2022 through 12:00 p.m. Eastern Standard Time on December 26, 2022. The Order authorizes all electric generating units located within the PJM Region to operate up to their maximum generation output levels under the limited circumstances described in this letter, notwithstanding air quality or other permit limitations. To the extent additional generators require inclusion on the list of units limited in their power output due to emissions, effluent, and other limits established by federal environmental permits and state requirements, such units must contact PJM using the Resource Limitations page of the Markets Gateway application and provide to PJM the information for such unit consistent with Exhibit A to this filing. PJM must share that information with the DOE. In compliance with the directive in the DOE Emergency Order PJM includes the name, municipality and zip code of the generation resources subject to this Emergency Order:

Calpine Bethlehem – Lehigh County, PA 18015

Calpine York – York County, PA 17314

LS Troy – Wood County, OH 43443

[Order](#)

- On December 24, 2022, pursuant to paragraph D of the Order, PJM submitted a notice to the DOE updating Attachment A to PJM’s Request. This update added to Attachment A additional generation units that PJM may have needed to operate in excess of environmental permitting limits under the allowances in the Order and it was posted on the PJM website on December 26, 2022 at <https://www.pjm.com/-/media/documents/ferc/orders/2022/20221225-doe-order-pjm-exhibity-a-update.ashx>
 - On December 30, 2022, as updated on January 3, 2023, PJM circulated the information set for the below to publications located in the affected communities where the Specified Resources operate that PJM has been issued the Order. This information was provided to the following publications:
-

- Allentown Morning Call (Lehigh County)
- Lehigh Valley Live
- York Daily Record
- Lancaster Online/Intelligencer Journal/Lancaster New Era (Lancaster County)

Over the Christmas holidays, the electric grid was put to the test as a result of the extreme cold weather experienced in this area and across much of the United States.

Here in (Lehigh/York/Lancaster) County, the bulk electric grid is managed by PJM Interconnection – a Pennsylvania-based company that is responsible for ensuring the reliability of the power grid in a region spanning 13 states plus the District of Columbia. PJM serves as the air traffic controller of the grid – ensuring the reliability of individual utility systems such as those serving eastern Pennsylvania, like PPL, Met-Ed or Peco.

Beginning Dec. 23, Winter Storm Elliott brought frigid temperatures across the entire footprint that caused heightened demand, power plant failures and fuel-supply limitations.

Late Friday, PJM asked consumers to reduce electricity use, if possible, between the hours of 4 a.m. Dec. 24 and 10 a.m. Dec. 25. The call for conservation efforts across the PJM region was the first since the Polar Vortex of January 2014.

In order to ensure that there would be adequate supplies of generation available for the evening peak on December 24, PJM also petitioned and received an order from the U.S. Department of Energy (DOE) to make additional generation available.

In response to PJM's petition, on December 24, the DOE issued an emergency order, under Section 202 c of the Federal Power Act, determining that an electric reliability emergency existed within the PJM Region that required intervention by the Secretary of the DOE to keep the power flowing.

The [Emergency Order](#) posted was effective December 24, 2022, through 12:00 p.m. Eastern Standard Time on December 26, 2022. The order authorized all electric generating units located within the PJM Region to operate up to their maximum generation output levels under limited, prescribed circumstances, even if doing so exceeded their air quality or other permit limitations.

PJM committed and the DOE ordered that PJM take a number of other steps, including calling upon certain customers who have been paid in advance to reduce their usage in times of emergencies, before calling on generators to run above their emissions limits. The amount of time for which such units could

exceed their permitted levels was limited, as was the Order itself, which expired on December 26. The DOE order and related documents can be accessed at the links below:

- [Department of Energy \(DOE\) Issues Emergency Order Pursuant to Section 202 \(PDF\)](#)
- [PJM to Department of Energy - 202C Filing \(PDF\)](#)
- [Department of Energy \(DOE\) - Order PJM Exhibit A Update \(PDF\)](#)

A total of two generating units that fell under the Order ran at levels that exceeded their permitting limits for a small number of hours. Those generators were:

- *Bethlehem Energy, a dual-fuel natural gas/fuel-oil unit (1,130 MW) located in Bethlehem, PA 18015 (Lehigh County)*
- *York Energy, a dual-fuel natural gas/fuel-oil unit (565 MW) located in Peach Bottom Township, PA 17314 (York County)*

PJM was able to meet load during the peak hours of the weekend and avoid any interruptions of power PJM will be providing more specific information to the DOE and to the public and posting that information on PJM.com.

In combination with the energy provided by units under the DOE Emergency Order, the response from customers worked to lower the energy use during the crucial peak times Saturday morning, Saturday evening and Sunday morning, helping the system to maintain reliability.

PJM extends its thanks to the U.S. Department of Energy, members and state partners for the system-wide cooperation to effectively and speedily communicate the need to conserve energy. We also thank consumers for helping PJM get through this cold weather event by relieving the strain on the bulk electric system.

- The Allentown Morning Call (Lehigh County) published a version of the information on the Order on January 8, 2023; however, it was limited to the Bethlehem generation facility because York Energy is not located in their geographic area. The Allentown Morning Call publication is as follows:

BUSINESS

How a Bethlehem power plant helped keep the heat on during a frigid Christmas weekend

By **Evan Jones**

The Morning Call

Jan 09, 2023 at 8:00 am



During the bitter cold weather around Christmas, the Calpine-owned Bethlehem Energy Center was permitted to increase its production for the power grid. (Courtesy of Calpine)

For those depending on electricity for heat, this past Christmas could've been a very cold one. Thanks to a power plant in Bethlehem, many were able to stay warm, and keep the holiday light displays on.

Calpine, which owns the Bethlehem Energy Center off of Applebutter Road, was given special permission from the U.S. Department of Energy to ramp up production as the energy grid was beginning to strain with high demand that caused some power plants to fail.

PJM Interconnection, which monitors the reliability of individual utility systems such as PPL, Met-Ed and PECO, made the request. PJM, which is based in Montgomery County and manages the bulk electric grid in the Lehigh Valley, serves as sort of an air traffic controller for the power grid in a region spanning 13 states plus the District of Columbia.

“At the request of PJM to ensure grid reliability, our Bethlehem and York Energy Centers operated for a handful of hours on Christmas Eve” with higher generating limits, Calpine spokesperson Brett Kerr said. “We thank our plant operations staff for their hard work to help meet increased electricity demand brought on by the bitter cold weather.”

The [emergency order](#) was effective Dec. 24 through noon Dec. 26. It authorized all electric generating units in the PJM region to operate up to their maximum generation output levels under limited, prescribed circumstances, even if doing so exceeded their air quality or other permit limitations.

PJM spokesperson Jeffrey Shields said consumers were asked to conserve electricity that weekend for the first time since a cold snap and a snowstorm in January 2014.

“The greatest factor really was the cold, not so much the Christmas lights per se. It was the way the cold came on so quickly,” Shields said. “And we also had generators that were having difficulty performing, because of the cold itself or because they couldn’t get fuel supply, that kind of thing. So we had more generators out than we expected and the generators that were left were asked to run at full capacity.”

On Dec. 23, the temperature in the Lehigh Valley almost hit 60 in the morning, but dropped into single digits in the evening. The next day, the high was 13 degrees before the temperature gradually increased over the next week.

The Bethlehem Energy Center was opened in 2003 and is a combined-cycle power plant fueled primarily by natural gas. Houston-based Calpine acquired the facility in 2010 as part of its purchase of the Conectiv Energy assets.

On its website, Calpine said the plant consists of two power blocks, each consisting of three combustion turbine-generator sets, three heat recovery steam generators and a steam turbine generator.

PJM’s service area has more than 85,000 miles of transmission lines and at full capacity, the plants in the region can generate 185,442 megawatts.

Shields said that the network normally doesn’t reach capacity, but on the evening of the 23rd, the load was up to 135,000 megawatts. An extra 45,000 megawatts was needed because of power plant outages.

While the call went out for conservation, Shields said, the chance of having to institute rolling blackouts was remote. The last time that happened was in January 1994, [when a deep freeze increased usage](#) in the Mid Atlantic states.

“We were several steps away from having rolling outages,” he said. “We would try not to impact one area too much. We have a big footprint and that’s something we haven’t done since 1994.”

Morning Call reporter Evan Jones can be reached at ejones@mcall.com

- On January 12, 2023, PJM also published PJM’s Inside Lines coverage of PJM’s Market Implementation Committee or MIC at <https://insidelines.pjm.com/pjm-operated-reliably-throughout-winter-storm-challenges/>. The Inside Lines story included information on the Order and the specific units that ran under the order.

- On January 25, 2023, PJM posted on its website a [web page](#) dedicated to Winter Storm Elliott information that includes documents regarding PJM's FPA section 202 (c) Request, and the Order that are posted elsewhere on PJM.com.

c. Report on Updated and Additional Information

PJM includes the following updates to information previously reported by PJM under the Order, and responses to questions from DOE staff:

- On December 25, 2022, PJM submitted to the Department pursuant to paragraph B of the Order a daily report on generating units designated to use the allowance provided in the Order that were dispatched by PJM. This daily report stated that both York Energy 1 and York Energy 2 ran beyond their limits under the Order. However, while both York Energy 1 and York Energy 2 were potentially needed to run under the terms of the order (and thus correctly included in the Attachment A list of Specified Resources), PJM subsequently learned that only York Energy 1 ran beyond permitting runtime limits. This misunderstanding occurred because of a communications error.
- The Bethlehem facility is located in Northampton County, not Lehigh County as initially reported. The region in which the plants resides, encompassing the cities of Allentown, Bethlehem and Easton is known as the Lehigh Valley.
- In an email dated January 13, 2023, from DOE staff to PJM, several questions were presented to PJM. The following are responses to those questions which were not already addressed in this report:
 - How many MWh were generated subject to the Order and during what time frame?
Answer: See information in Part II.a above.
 - With respect to combined cycle units, how much of the operation subject to the Order was outside of EEA Level 2 or higher periods?
Answer: None.
 - How much of the operation subject to the Order was to charge storage resources or to pump for pump storage facilities?
Answer: None.
 - Are units that were dispatched subject to the 202(c) order also eligible to receive revenues from payment of Non-Performance Charges for hours of operation subject to the Order?
Answer: PJM continues to investigate this matter.

Respectfully submitted,

/s/ Steven R. Pincus

Steven R. Pincus
PJM Interconnection, L.L.C.

cc:

Craig Glazer
Vice President – Federal Government
Policy PJM Interconnection, L.L.C.

Christopher O’Hara
Senior Vice President, General Counsel,
& Chief Compliance Officer
PJM Interconnection, L.L.C.

Mark J. Stanisz
Assistant General Counsel
PJM Interconnection, L.L.C.

M. Gary Helm
Senior Lead Market Strategist
PJM Interconnection, L.L.C.

Sarah Novosel
Senior Vice President and Associated
General Counsel
Calpine Corporation