Attention Commission Docket No. RM18–1–000
Federal Energy Regulatory Commission
Secretary of the Commission
888 First Street, NE
Washington, DC 20426

Re: Comments on the Grid Resiliency Pricing Rule

Dear Secretary Kimberly D. Bose:

The Alliance for Industrial Efficiency (hereinafter, "The Alliance") appreciates this opportunity to comment on the Grid Resiliency Pricing Rule regarding FERC's efforts to ensure that the reliability and resilience attributes of electric generation resources are fully valued.[1] The Alliance is a diverse coalition that includes representatives from the business, labor, and contractor communities. We are committed to enhancing manufacturing competitiveness and reducing emissions through industrial energy efficiency, particularly through the use of clean and efficient power generating systems such as combined heat and power (CHP) and waste heat to power (WHP). We are writing to highlight our concerns about the omission of these technologies in the Notice of Proposed Rulemaking (NOPR).

In his letter announcing the NOPR, Secretary Perry asserts that "In the wake of devastation wrought by the Polar Vortex, Superstorm Sandy, and Hurricanes Harvey, Irma, and Maria, much more work needs to be done to preserve these fuel-secure generation resources that have the essential reliability and resiliency attributes needed to keep the lights on for all Americans in times of crisis."[2] The NOPR reiterates this goal, asserting that "Affordable, Reliable and Resilient Electricity Is Vital to the Economic and National Security of the United States and Its People."[3] We wholeheartedly agree with this charge; however, are concerned that the NOPR is misguided in its definition of resilient power sources and in its proposed pathway forward. Our comments do not opine on the legality nor validity of compensating baseload coal and nuclear generation. We believe this issue will be ably addressed by other stakeholders. Our comments focus exclusively on the fallacy of defining resiliency to exclude clean and efficient CHP.

Our comments make three key points:

1. Below-ground infrastructure is more reliable than electric systems;
2. CHP is a reliable technology; and
3. CHP has a track record of performance during natural disasters.

[1] DOE, Federal Energy Reg'y Comm'n, Oct. 10, 2017, 82 Fed. Reg. 46940, Notice of Proposed Rule Making: "Grid Resiliency Pricing Rule," https://www.gpo.gov/fdsys/pkg/FR-2017-10-10/pdf/2017-21396.pdf
[2] Letter from Sec. Perry, DOE to Neil Chatterjee, *et al* (FERC), Sept. 28, 2017, "Secretary of Energy's Direction that the Federal Energy Regulatory Commission Issue Grid Resiliency Rules Pursuant to the Secretary's Authority under Section 403 of the Department of Energy Organization Act," https://energy.gov/downloads/secretary-rick-perrys-letter-federal-energy-regulatory-commission
[3] 82 Fed. Reg. at 46941.

We urge FERC to support policies that encourage greater deployment of CHP to advance its economic and natural security goals. Moreover, should FERC determine that technologies that improve the reliability of the grid deserve appropriate pricing in electricity markets, then CHP should likewise enjoy a reliability pricing benefit.

1. **Below-Ground Infrastructure Is More Reliable**

The NOPR hinges on the belief that electric reliability is dependent upon fuel availability, limiting support to energy sources that have a 90-day supply of fuel available on site. In fact, fuel supply rarely determines reliability. Rather, severe weather events can destroy above-ground power lines and compromise transmission and distribution infrastructure.

While CHP systems can run on any fuel, the vast majority rely on natural gas. This contributes to their reliability. Indeed, natural gas systems are inherently reliable and resilient because the pipelines that provide their fuel are underground and thus insulated from storm surge and other surface activities. As noted in a 2013 MIT report:

> The natural gas network has few single points of failure that can lead to a systemwide propagating failure. There are a large number of wells, storage is relatively widespread, the transmission system can continue to operate at high pressure even with the failure of half of the compressors, and the distribution network can run unattended and without power. This is in contrast to the electricity grid, which has, by comparison, few generating points, requires oversight to balance load and demand on a tight timescale, and has a transmission and distribution network that is vulnerable to single point, cascading failures.[4]

Moreover, an analysis by the Rhodium Group of Energy Information Administration (EIA) data belies the NOPR's assertion that reliability depends upon fuel availability. The Rhodium Group examined utility-reported outages to DOE during a five-year period (2012-2016) and found that only 2,382 of 3.4-billion customer-hours impacted by major electricity disturbances – or 0.00007 percent of reported outages – could be attributed to fuel supply problems. What's more, the vast majority of *those* outages (2,333 hours) were caused by a single event involving a frozen coal pile at a coal-fired power plant. EIA data thus confirms that fuel availability is not the problem; outages are caused when severe weather compromises power lines.[5]

Because CHP can island from the grid, these systems can keep the lights and power on when power lines fail.

[4] Massachusetts Institute of Technology, Lincoln Laboratory, "Interdependence of the Electricity Generation System and the Natural Gas System and Implications for Energy Security," May 15, 2013 (cited in http://www.ngsa.org/download/analysis_studies/NGC-Reliable-Resilient-Nat-Gas-WHITE-PAPER-Final.pdf).

[5] The Rhodium Group, Trevor Houser *et al,* Oct. 3, 2017, "The Real Electricity Reliability Crisis," http://rhg.com/notes/the-real-electricity-reliability-crisis

2. CHP Is a Reliable Technology

CHP systems are valued *because of* their reliability. The Environmental Protection Agency's (EPA) "Catalog of CHP Technologies" documents the system availability of a suite of different CHP technologies.[6] According to this data, most technologies enjoy greater than 95% reliability (Table 1).

Table 1: CHP System Availability

Prime Mover	Reciprocating Engine	Steam Turbine	Gas Turbine	Microturbine	Fuel Cell
System Availability	96-98%	72-99%	93-96%	98-99%	>95%

In fact, these numbers are conservative. CHP hosts report much higher reliability figures and believe that EPA's numbers include *scheduled* (i.e., planned) outages.

This suggests that any policy that is intended to increase grid reliability should encourage greater use of CHP.

3. CHP Has a Track Record of Performance During Natural Disaster

FERC seeks to "provide electric energy, capacity, and essential grid reliability services" during natural disasters.[7] Because many CHP systems can function in island mode, they can remain operational during extreme weather events, which may compromise the electric grid. This attribute was on sharp display in October 2012 during Hurricane Sandy. While, 8.5-million residents in New Jersey, New York, and Connecticut lost power and heat during the storm, facilities with CHP systems kept their electricity on and heat flowing. A notable example is South Oaks Hospital on Long Island, a 350,000-square foot facility that includes an acute psychiatric hospital, a nursing home, and an assisted living center. During the storm and its aftermath, the hospital maintained full power through the use of its 1.3-megawatt CHP system.

CHP also helped keep the lights on NYU's Washington Square campus, where a 13 MW CHP system serves 37 buildings. **T**hat campus had electricity, heat, and hot water during the storm. It became a place of refuge during the height of the storm. In sharp contrast, the NYU Langone Medical Center did not have CHP. Its back-up generator failed and the hospital lost all power, knocking out its communications systems and leading to the dangerous forced evacuation of critical care patients on gurneys and in dozens of ambulances.[8] In response to its experience at the two campuses, NYU has since constructed a new CHP energy plant for the NYU Langone

[6] U.S. EPA, 2015, "Catalog of CHP Technologies," https://www.epa.gov/sites/production/files/2015-07/documents/catalog_of_chp_technologies.pdf

[7] 82 Fed. Reg. at 46941.

[8] Richard Esposito & Dan Child, ABC News, Oct. 30, 2012, "Backup Generator Fails; NYU Medical Center Evacuated," http://abcnews.go.com/Health/superstorm-sandy-backup-generator-fails-nyu-medical-center/story?id=17594665 & Gregory McNeal, Forbes, Oct. 29, 2012, "NYU Hospital Without Power, Evacuation Underway, Bellvue Hospital with Only 2 Hours of Power Left," https://www.forbes.com/sites/gregorymcneal/2012/10/29/nyu-hospital-without-power-evacuation-underway/#490ac6e5348b

Medical Center campus. Langone will now be completely self-sufficient in the event of a utility power interruption.

These CHP success stories – along with one-dozen others, are chronicled in a report commissioned for DOE's Oak Ridge National Laboratory in the wake of the storm ("Combined Heat and Power: Enabling Resilient Energy Infrastructure for Critical Facilities").[9] The report chronicles the remarkable reliability of CHP systems in the region – far surpassing the performance of back-up generators. Indeed, DOE writes that during the blackout of 1993, half of New York's 58 metropolitan hospitals had failures in their backup generators – allowing 145-million gallons of raw sewage to be released from a Manhattan pumping station.[10] In contrast, a survey of 24 CHP sites in New York during Hurricane Sandy found that not a single site failed to perform as expected.[11]

CHP's reliability benefits were evident again during the 2017 hurricane season. A propane-fired CHP system kept the lights and power on at Hospital de la Concepcion, a 167-bed facility in Puerto Rico, during Hurricane Maria. Remarkably, the system was installed earlier this year.[12] A recent DOE publication confirms that, "While much of Houston, Texas, and the surrounding areas, were faced with uncertainty as Hurricane Harvey made landfall, the Texas Medical Center – the largest medical center in the world – was able to sustain its air conditioning, refrigeration, heating, sterilization, laundry, and hot water needs throughout the storm thanks to [a 48 MW CHP natural gas-fired CHP system that] provide[s] reliability and security to the 19 million square foot medical campus even in the event of prolonged grid outages."[13] Less than one month after publishing this account of CHP's reliability benefits, the NOPR redefines reliability to exclude systems like those in use at the Texas Medical Center.

Recognizing CHP's resiliency benefits, DOE's Better Buildings Initiative launched a "Combined Heat and Power for Resiliency Accelerator" with a mission to "examine the perceptions of CHP among resiliency planners, identify gaps in current technologies or information relative to resiliency needs, and develop plans for communities to capitalize on CHP's strength as a reliable, high efficiency, lower emissions electricity and heating/ cooling source for critical infrastructure."[14] The fact sheet describing the initiative explains, "Combined heat and power (CHP) has proven effective in ensuring uninterrupted electric service through multiple major disasters in hospitals, schools, and places of refuge."[15] Through the Accelerator, DOE is to work

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[9] DOE, Oak Ridge National Laboratory, ICF International. March 2013, "Combined Heat and Power: Enabling Resilient Energy Infrastructure for Critical Facilities" https://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_critical_facilities.pdf

[10] *Id.*

[11] *Id.* at 15.

[12] Presentation of Sarah Eastman, GE at the CHP Association Conference, Oct. 11, 2017, "Resiliency Stories: Case Studies from Recent Natural Disasters."

[13] https://energy.gov/eere/amo/articles/chp-installation-keeps-hospital-running-during-hurricane-harvey

[14] DOE, "Combined Heat and Power for Resiliency" website, https://betterbuildingssolutioncenter.energy.gov/accelerators/combined-heat-and-power-resiliency (visited Oct. 16, 2017).

[15] DOE Better Buildings, Fact Sheet: Combined Heat and Power for Resiliency Accelerator, https://betterbuildingssolutioncenter.energy.gov/accelerators/combined-heat-and-power-resiliency (under Other Resources section)

with its partners to "Identify any technical, policy or economic barriers impending [sic] CHP installations in CI [critical infrastructure]."[16]

It is arbitrary and capricious for DOE to simultaneously celebrate CHPs resiliency benefits while proposing a rule that defines resilient technologies to exclude CHP. Indeed, the proposed incentives for coal and nuclear power create precisely the type of "economic barrier" that DOE's Resiliency Accelerator is designed to overcome.

CONCLUSION

The Alliance for Industrial Efficiency wholeheartedly supports DoE and FERC's efforts to make the electric grid more reliable. However, we believe that any efforts to do so must acknowledge CHP's resiliency benefits.

We look forward to working with FERC to explore opportunities to encourage deployment of CHP to advance our collective interest in grid reliability.

Thank you for the opportunity to comment.

Jennifer Kefer
Executive Director, Alliance for Industrial Efficiency

[16] *Id.*