**Jennings, Strouss & Salmon, PLC**
Attorneys at Law

Jennings Strouss

1350 I Street, NW - Suite 810
Washington, D.C. 20005-3305
Telephone: 202.292.4738
www.jsslaw.com

**Andrea I. Sarmentero Garzón**
Direct Dial: 202.370.4128
Direct Fax: 202.370.0142
asarmentero@jsslaw.com

Admitted only in New York

October 23, 2017

**VIA ELECTRONIC FILING**

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: Docket No. RM18-1-000 – Comments on Proposed Grid Resiliency Pricing Rule

Dear Secretary Bose:

Please find attached for filing in the above-referenced proceeding the comments of the International District Energy Association on the Grid Resiliency Pricing Rule proposed by the Secretary of Energy for final action by the Commission. Should you have any questions regarding the attached, please feel free to contact the undersigned.

Sincerely,

*/s/ Andrea I. Sarmentero Garzón*
Andrea I. Sarmentero Garzón
Gerit F. Hull
Joel L. Greene
*Attorneys for International District Energy Association*

Attachment

**UNITED STATES OF AMERICA**
**BEFORE THE**
**FEDERAL ENERGY REGULATORY COMMISSION**

| | | |
|---|---|---|
| **Grid Reliability and Resilience Pricing** | **)** | **Docket No. RM18-1-000** |

**COMMENTS OF**
**<u>INTERNATIONAL DISTRICT ENERGY ASSOCIATION</u>**

Pursuant to the Notice Inviting Comments issued by the Federal Energy Regulatory Commission ("FERC" or "Commission") on October 2, 2017 in the captioned docket, the International District Energy Association ("IDEA") respectfully submits comments on the Grid Resiliency Pricing Rule proposed by the Secretary of Energy ("Secretary") for final action by the Commission.[1] The Secretary has proposed that the Commission exercise its authority under sections 205 and 206 of the Federal Power Act ("FPA")[2] to adopt certain rules governing Commission-approved independent system operators ("ISOs") and regional transmission organizations ("RTOs"). The proposed rules are intended to ensure that the reliability and resilience attributes of electric generation resources are fully valued.[3]

IDEA appreciates the opportunity to comment on the proposed rule. IDEA has not yet formed an opinion regarding whether reliability and resiliency benefits can or should be separately priced in wholesale electricity markets. IDEA's comments focus on demonstrating that the energy resources included in its members' district energy systems and microgrids do provide substantial resiliency and reliability benefits to the grid as a whole. In the event the Commission directs RTOs and ISOs to separately price these benefits in their respective markets,

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1 *See Grid Resiliency Pricing Rule*, 82 Fed. Reg. 46,940 (Oct. 10, 2017) ("DOE NOPR").

2 16 U.S.C. §§ 824d, 824e.

3 *See* Letter from Rick Perry, Secretary of Energy, to Neil Chatterjee, Chairman *et al.* (Sep. 28, 2017) ("DOE Letter").

IDEA urges the Commission to ensure that any eligibility criteria adopted are non-discriminatory and accommodate participation by IDEA members' resources.

The proposed rule appears to reward only merchant coal and nuclear generators for their contributions to grid resiliency, to the exclusion of all other resources. It is unduly discriminatory on its face and should be rejected. In the event the Commission intends to consider adopting a revised version of the proposed rule, the Commission should undertake further analysis to appropriately define "eligible grid reliability and resiliency resources" and to develop guidance for the ISOs and RTOs that would determine how to measure, value, and ultimately internalize the costs of resiliency and reliability attributes within their competitive wholesale electric market price formation mechanisms in a way that benefits, rather than imposes additional burdens on, electric customers, such as IDEA members. The Commission should initiate a technical conference building on the record already before the Commission in related dockets, including but not limited to the technical conferences held this year addressing reliability (Docket No. AD17-8) and state policies and wholesale markets (Docket No. AD17-11); as well as rulemaking initiatives such as the Distributed Energy Resources and Storage Notice of Proposed Rulemaking ("NOPR") (Docket No. RM16-23), and the price formation proceedings listed in the DOE NOPR.[4]

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[4] *See* DOE NOPR at 9-10.

## I. COMMUNICATIONS

The names, titles and addresses of the persons to whom communications with respect to these proceedings should be addressed are:


Andrea I. Sarmentero-Garzón
Gerit F. Hull
Joel L. Greene
Jennings, Strouss & Salmon, P.L.C.
1350 I Street, NW, Suite 810
Washington, DC 20005
(202) 370-4738
asarmentero@jsslaw.com
ghull@jsslaw.com
jgreene@jsslaw.com

Robert P. Thornton
President & CEO
International District Energy Association
24 Lyman Street, Suite 230
Westborough, MA 01581
508-366-9339
rob.idea@districtenergy.org

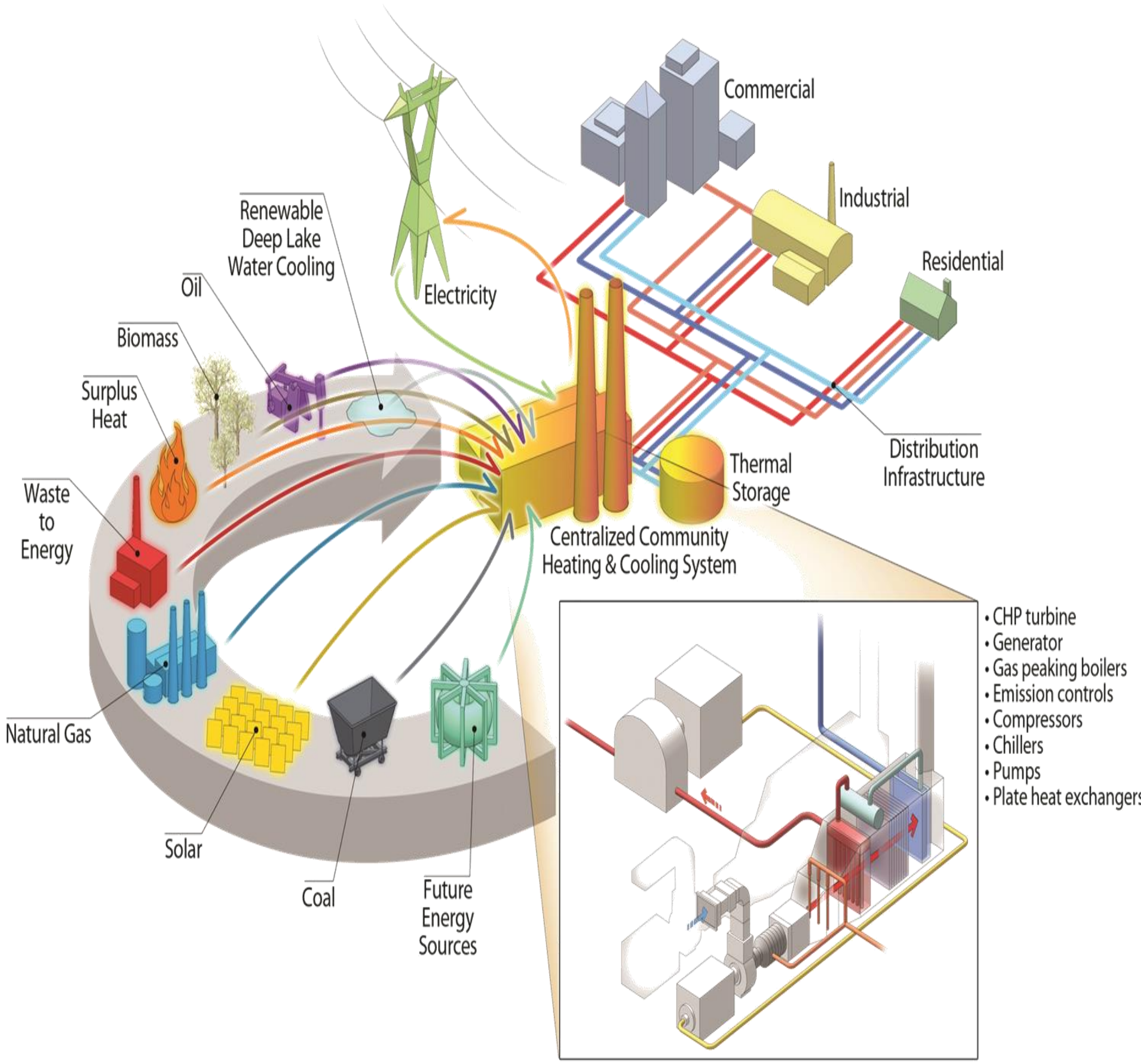

## II. BACKGROUND

On October 4, 2017, the Commission's Office of Energy Policy and Innovation issued a request for information seeking to focus comments related to the DOE NOPR toward addressing a variety of questions regarding resilience, reliability, eligibility, and related topics.[5] IDEA's comments respond to a number of these questions and identify relevant issues concerning the resiliency and reliability attributes of district energy systems and microgrids. Microgrids are local electric systems that combine retail loads and distributed energy resources. A microgrid may include integrated management of thermal and electric loads, thermal and electric storage, and a "smart interface" with the grid that facilitates operation in parallel or in isolation from the grid.[6]

[5] OEPI, Request for Information, Docket No. RM18-1-000 (issued Oct. 4, 2017) ("Staff Request").

[6] Additional information on microgrids can be found at http://www.districtenergy.org/topics/microgrids.

**FIGURE 1: Microgrid System.**




Source: IDEA

Cities, communities, and campuses throughout the nation are actively seeking more resilient, sustainable energy infrastructure to support economic growth and achieve environmental objectives. District energy and microgrids incorporate combined heat and power ("CHP") to produce electric and thermal energy while delivering greater energy efficiency and optimizing the use of local resources. At the same time, these resources strengthen the local and regional power grids.

## III. RESPONSES TO COMMISSION STAFF'S QUESTIONS

IDEA respectfully submits the following responses to a number of questions presented by the Commission's Office of Energy Policy and Innovation. As discussed below, IDEA also proposes that certain of these questions be addressed in a technical conference.

### 1. What Is Resilience? How Is Resilience Different from Reliability?

"Resilience" is the capability to recover quickly from difficulties—toughness.[7] In the context of the electric grid, resilience generally refers to the ability of the electric power system to withstand and recover from extreme disturbances caused by weather and other natural disasters, as well as cyber and physical attacks.[8] Improved resiliency reduces the magnitude, frequency, or duration of disruptive events on the electric system and expedites recovery. This can involve physically "hardening" the electric infrastructure to make it less susceptible to damage, adopting operating protocols, and other techniques.

Grid reliability is commonly defined as a combination of system *adequacy* and *operating reliability*. System adequacy depends on the ability of the electric system to meet the aggregate energy and capacity requirements of electric customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system components. Operating reliability is the ability of the electric system to withstand sudden disturbances, such as short circuits or unanticipated loss of system components.[9]

7 *See* https://en.oxforddictionaries.com/definition/resilience.

8 Transcript of May 2, 2017 RTO Conference, Docket No. AD17-11, at 517 (issued May 30, 2017).

9 *See, e.g.*, NERC, Definition of "Adequate Level of Reliability," at 5 (as approved by NERC's Operating Committee and Planning Committee at their December 2007 meetings) *available at* www.nerc.com/docs/pc/Definition-of-ALR-approved-at-Dec-07-OC-PC-mtgs.pdf.

Resiliency differs from reliability. Resiliency is the ability of the power grid to withstand and recover from extreme events, while reliability relates to more typical operating conditions. However, efforts to improve resiliency can simultaneously increase operating reliability because modifications that protect the grid from extreme events can protect against more typical events as well. From this perspective, promoting a more resilient grid promotes a more reliable grid.

### 2. Is Fuel Diversity Within a Region or Market Itself Important for Resiliency?

Fuel diversity is important for resiliency if it is properly planned and managed. Different resources have different reliability and resiliency attributes, as described in Table 1 below. An adequate level of fuel diversity fosters flexibility and adaptability of the grid when facing extreme events by mitigating risks associated with equipment failure, fuel price volatility, and fuel supply disruptions. District energy systems and microgrids are an important part of this diverse resource portfolio. Many district energy systems and microgrids utilize base-load CHP generation, have proven their ability to withstand extreme events, can offer many ancillary and restoration services to the larger grid, and are located close to load (thereby reducing the need for reinforcement of the transmission system).

**TABLE 1: Mapping Reliability Attributes to Resources.**

● = Exhibits Attribute
◓ = Partially Exhibits Attribute
○ = Does Not Exhibit Attribute

| | Essential Reliability Services (Frequency, Voltage, Ramp Capability) | | | | | Fuel Assurance | | Flexibility | | | Other | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Frequency Response (Inertia & Primary) | Voltage Control | Ramp | | | | | | | | | | |
| Resource Type | | | Regulation | Contingency Reserve | Load Following | Not Fuel Limited (> 72 hours at Eco. Max Output) | On-site Fuel Inventory | Cycle | Short Min. Run Time (< 2 hrs.)/ Multiple Starts Per Day | Startup/ Notification Time < 30 Minutes | Black Start Capable | No Environmental Restrictions (That Would Limit Run Hours) | Equivalent Availability Factor |
| Hydro | ● | ● | ● | ● | ● | ○ | ◓ | ● | ● | ● | ● | ◓ | ● |
| Natural Gas - Combustion Turbine | ● | ● | ◓ | ● | ◓ | ● | ○ | ● | ● | ● | ● | ◓ | ◓ |
| Oil -Steam | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ◓ |
| Coal - Steam | ● | ● | ● | ● | ● | ● | ● | ◓ | ○ | ○ | ○ | ◓ | ◓ |
| Natural Gas - Steam | ● | ● | ● | ● | ● | ● | ○ | ● | ○ | ○ | ● | ◓ | ◓ |
| Oil/ Diesel - Combustion Turbine | ● | ● | ○ | ● | ○ | ○ | ● | ● | ● | ● | ● | ○ | ◓ |
| Nuclear | ◓ | ● | ○ | ○ | ◓ | ● | ● | ○ | ○ | ○ | ○ | ◓ | ● |
| Battery/ Storage | ◓ | ◓ | ● | ● | ○ | ○ | ○ | ● | ● | ● | ◓ | ● | ● |
| Demand Response | ○ | ○ | ◓ | ◓ | ◓ | ◓ | ◓ | ● | ● | ◓ | ○ | ● | ● |
| Solar | ◓ | ◓ | ○ | ○ | ◓ | ○ | ○ | ● | ● | ● | ○ | ● | ● |
| Wind | ◓ | ◓ | ○ | ○ | ◓ | ○ | ○ | ● | ● | ● | ○ | ◓ | ● |

Source: DOE[10]

Appropriately internalizing the costs of reliability and resiliency attributes in wholesale markets would require fuel neutrality and market pricing. Different types of resources have different reliability and resiliency attributes and associated costs. The attributes and costs associated with individual resources within each class vary as well. Applying fuel-neutral price formation mechanisms in wholesale markets would internalize the costs of these attributes and promote fuel diversity at the lowest cost.

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10 DOE Staff Report to the Secretary on Electricity Markets and Reliability, at 86 (Aug. 2017) *available at* https://energy.gov/staff-report-secretary-electricity-markets-and-reliability.

### 3. What Technical Capability Should Be Required to Be an Eligible Resource?

The proposed rule contains a definition of "grid reliability and resiliency resource" that requires the resource to be: (1) an electric generator physically located within an RTO or ISO that operates a capacity market; (2) able to provide essential energy and ancillary reliability services; (3) compliant with all applicable laws and regulations; and (4) not subject to cost-of-service rate regulation by any state or local authority. In addition, a grid reliability and resiliency resource must have a 90-day fuel supply on-site. This portion of IDEA's comments focuses on proposed technical capabilities of grid reliability and resiliency resources. Fuel stockpiling, resource size, and related issues are discussed *infra* in sections 4 through 6 of these comments.

#### 3.1. Reliability and Resiliency Resources Need Not Be a "Generation" Resource

While district energy systems and microgrids can sell energy and ancillary services to the grid, they often operate as demand response resources.[11] Demand response resources reduce customer loads, rather than generate electric energy. However, demand response resources improve the resiliency and reliability of the grid. Microgrids connected to district energy systems can act as demand response resources in multiple ways, utilizing thermal as well as electric capacity and energy. These demand responses can include: (a) ramping up power generation; (b) absorbing and storing excess grid energy from variable renewable resources that would otherwise stress the grid; (c) shifting from electricity to thermal energy to meet requirements (such as with steam-driven chillers, thereby displacing electricity demand); (d) reducing power demand through sophisticated controls or by drawing on stored thermal energy; or (e) dropping off the grid entirely. In other words, demand response resources such as

[11] FERC defines demand response as: "[c]hanges in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized," at https://www.ferc.gov/industries/electric/indus-act/demand-response/dr-potential.asp.

microgrids connected to district energy systems improve resiliency because they reduce stress on the grid during system emergencies and outages, and improve reliability during regular system operations by supporting local voltage levels, reducing congestion, managing peak demand, and addressing other operational contingencies.

The reliability benefits of demand response are explained in numerous studies and Commission orders. For example, FERC Staff's National Plan on Demand Response, prepared to forward the objectives of the Energy Independence and Security Act of 2007, proposed to "advance the use of demand response to support *reliable* and efficient operations of wholesale transmission, energy, capacity, and ancillary services markets."[12] The 2017 National Academy of Sciences Study on resiliency recommends the deployment of microgrids as one of the strategies to increase the resiliency of the grid.[13] FERC precedent similarly supports a factual finding that demand response supports reliable grid operations.[14] A 2006 DOE Report to Congress lists among the reliability benefits of demand response "the operational security and adequacy savings that result because demand response lowers the likelihood and consequences of forced outages that impose financial costs and inconvenience on customers."[15] In more general terms, a 2007 DOE Study found that distributed generation, such as that found in district energy systems

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[12] FERC Staff National Action Plan at 67, *available at* https://www.ferc.gov/legal/staff-reports/06-17-10-demand-response.pdf.

[13] National Academy of Sciences, *Enhancing the Resilience of the Nation's Electricity System*, at S-11 (2017) *available at* https://doi.org/10.17226/24836.

[14] *See, e.g., Independent Market Monitor for PJM v. PJM Interconnection, L.L.C.,* 155 FERC ¶ 61,059, at P 33, n20 (2016) (stating that there are demand resource programs that MISO, PJM and NYISO administer for reliability, or emergency conditions); *ISO New England Inc.*, 154 FERC ¶ 61,133 at P 12 (2016) (stating that the demand response component of the New England ISO ensures reliability by helping to avoid resource unavailability at times when the system is stressed); and *ISO New England Inc*., 152 FERC ¶ 61,190, at P 49 (2015) (explaining that demand response resources can be dispatched at times when generator availability risks due to fuel uncertainty are highest thereby providing additional reliability to the grid by helping the ISO avoid resource unavailability at times when the system is stressed).

[15] U.S. Department of Energy, Benefits of Demand Response In Electricity Markets and Recommendations for Achieving Them: Report to the United States Congress Pursuant to Section 1252 of the Energy Policy Act of 2005, at *vi* (Feb. 2006) (DOE DR Report) *available at* https://energy.gov/oe/downloads/benefits-demand-response-electricity-markets-and-recommendations-achieving-them-report.

and microgrids, can be used by electric system planners and operators to improve reliability by, for example, reducing stress on grid components.[16] Given the proven value of demand response as a resiliency and reliability tool for the grid, as acknowledged by FERC and the DOE, it would be arbitrary and capricious to require that reliability and resiliency resources be limited to electric generators, to the exclusion of demand response and storage resources.

### 3.2. District Energy Systems and Microgrids Can Provide Essential Energy and Ancillary Services

District energy systems and microgrids contribute to the resiliency of the grid directly and indirectly. Direct contributions include providing energy, ancillary services, and restoration services following outages on the transmission system. Indirect contributions include keeping critical infrastructure functioning during grid outages, aiding first responders in their work, and providing continuous electric service to critical facilities such as hospitals and shelters.

#### a) Provision of Energy, Ancillary Services, and Restoration Services

Grid-connected microgrids can provide ancillary services to the grid including: regulation and frequency response; reactive supply and voltage control; operating reserves; and real power loss services.[17] Microgrids can also provide restoration services such as black start, which are of key importance to the resiliency of the grid. The microgrids at Co-op City (New York, NY), Nassau Energy Corp. (Garden City, NY), and the College of New Jersey (Ewing, NJ) offer examples of the restoration services that microgrids can offer, as follows:

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[16] U.S. Department of Energy, The Potential Benefits of Distributed Generation and Rate-related Issues that May Impede Their Expansion: A Study Pursuant to Section 1817 of the Energy Policy Act of 2005, sec. 2 (Feb. 2007) (DOE DG Study) *available at*. https://www.ferc.gov/legal/fed-sta/exp-study.pdf.

[17] *See, e.g.,* The U.S. Department of Energy Microgrid Initiative, Electricity Journal, Vol. 25, Issue 8, at 85, (Oct. 2012) (listing among the benefits of microgrids their ability to support the macrogrid by handling sensitive loads and the variability of renewables locally and supplying ancillary services to the bulk power system) *available at* http://dx.doi.org/10.1016/j.tej.2012.09.013.

- Co-op City is a residential development home to roughly 50,000 people in the east corner of the Bronx. After the 2003 blackout, Co-op City invested in a microgrid served by a 40 MW CHP facility. During Superstorm Sandy, Co-op City was able to reliably provide electricity, heat, and hot water to its 50,000 residents without interruption.[18] In the aftermath of Sandy, Co-op City helped restore the grid by providing black start services to Consolidated Edison.[19]
- Nassau Energy has a microgrid supported by a 57 MW CHP facility. During Superstorm Sandy, Nassau Energy provided power to the Long Island Power Authority, helping with restoration efforts. Furthermore, Nassau Energy provided thermal energy to the Nassau University Medical Center and the Nassau Community College during Superstorm Sandy. In part because of Nassau Energy's services, the Medical Center was able to attend to several patients displaced from nursing homes during the storm, and the Community College served as an emergency shelter that provided services to over 1,000 people displaced by the storm for over one month.[20]
- The College of New Jersey has a microgrid supported by a 5.2 MW CHP facility. The College operated in island mode during Superstorm Sandy and maintained electric service despite grid disruptions. In the aftermath of the storm, the College was able to use its equipment to back-feed one of PSE&G's power lines to bring it back to service.[21]

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[18] Environmental Defense Fund Report: Sandy Success Stories at 67-68 (Jun. 2013) (EDF Report) *available at* https://www.edf.org/sites/default/files/sites/default/files/content/SandySuccessStories_June2013.pdf.

[19] IDEA briefing jointly with the Microgrid Resources Coalition and the Environmental and Energy Study Institute on microgrid policy guidance (Dec. 6, 2016) (IDEA Briefing) *available at* http://www.eesi.org/briefings/view/120616idea.

[20] ICF International Report, Combined Heat and Power: Enabling Resilient Energy Infrastructure for Critical Facilities at 25 (Mar. 2013) (ICF Report) *available at* https://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_critical_facilities.pdf.

[21] *Id*. at 18.

### b) Protection of Critical Infrastructure When it is Most Needed

Water systems, communication systems, transportation networks, emergency operations centers, and nearly every category of critical infrastructure, as defined by the PATRIOT Act of 2001,[22] are dependent on electricity. In this sense, electricity is the "critical enabler" of homeland security.[23] Electric customers are less vulnerable to supply interruptions when they have the ability to "island" themselves and thus to protect their individual segments of the grid, particularly in the vicinity of critical infrastructure facilities.[24] From this perspective, microgrids can be indispensable toward ensuring that first responders can perform their jobs by maintaining electric service to emergency centers and hospitals, shelters, police stations, and other critical facilities. There are many examples of microgrids withstanding major disturbances and allowing critical infrastructure to be operational during emergency events. Here are a few cases where the resiliency of microgrids supported critical infrastructure:

- The Danbury Hospital (Danbury, CT) has a microgrid supported by a 4.5 CHP unit that provides the buildings at this 371 bed hospital with electric power and heat. The Danbury Hospital was able to withstand Superstorm Sandy due to its ability to operate in isolation from the macrogrid during the storm and continued to admit patients from other sites that were forced to close due to the storm.[25]
- The South Oaks Hospital (Amityville, NY) has a microgrid supported by a 1.25 MW CHP facility. During Superstorm Sandy, the Hospital isolated itself from the grid and

[22] 42 USC § 5195c(e) (defining "critical infrastructure" as systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters).

[23] DOE DG Study at Sec. 7.

[24] *Id*.

[25] *See* Dhanya Skariachan, *Hospitals battled to protect patients as Sandy raged*, Reuters, Oct. 30, 2012, http://www.reuters.com/article/us-storm-sandy-hospitals/hospitals-battled-to-protect-patients-as-sandy-raged-idUSBRE89T1NV20121030.

was able to provide critical services for two weeks relying solely on its CHP system. The hospital admitted patients from other sites that had been displaced by the storm, and offered refrigeration of vital medicines to those who had lost power and had no other means of keeping their medicines refrigerated.[26]

- New York University (New York, NY) has a microgrid supported by a 14.4 MW CHP facility. During Superstorm Sandy, the NYU microgrid provided uninterrupted electric service, heating, and cooling to the campus, which served as a command post for New York City officials during the storm and served area residents that had been forced to evacuate their homes.[27]
- The Louisiana State University ("LSU") (Baton Rouge, LA) has a microgrid supported by two CHP facilities totaling approximately 24 MW of nameplate capacity. LSU stayed online and never lost power during Hurricane Katrina in 2005, and again during Hurricane Gustav in 2008, allowing the campus to be used as shelter for many employees that had been displaced by the hurricanes.[28]

### 3.3. <u>Other Technical Requirements in the Proposed Eligibility Criteria</u>

The eligibility criteria in the proposed rule include compliance with all applicable federal, state, and local environmental laws, rules, and regulations. These requirements inherently apply to all resources participating in wholesale electricity markets. The DOE NOPR provides no reason why reliability and resiliency resources should be called out to comply with the law.

Similarly, the carve-out making resources ineligible if they are subject to cost of service rate regulation by state or local regulatory authorities is unjustified. To the extent that the

[26] ICF Report at 13.
[27] *Id*. at 29.
[28] *Id*. at 24.

Commission finds a way to quantify and appropriately price in competitive markets the attributes contributing to resiliency and reliability of the electric grid, it should not matter whether a resource is subject to cost-of-service rate regulation. The Commission should not provide a financial advantage to merchant generators over other capable resources.

### 4. Should a Final Rule Be Limited to Existing Units or Should New Resources Also Be Eligible for Cost Recovery? Should Repowering of Previously Retired Units Be Included?

Any pricing mechanism adopted by the Commission should allow participation by new and repowered units, not just existing units. Compensation provided to resiliency resources should reflect the value of the resiliency that the resource provides. As discussed above, the final rule should allow the market to set the price for the resiliency provided by electric generating facilities without regard to fuel source, ownership, or other criteria that are resource-specific but not determinative of resiliency. In order to achieve adequate resiliency and the best value for consumers, resiliency should be provided by the most efficient resources. These principles dictate that new units and repowered units, as well as existing units, should be eligible to participate in wholesale electricity markets as reliability and resiliency resources to the extent they provide resiliency and reliability to the grid.

### 5. Should There Be a Minimum Number of MW or a Maximum Number of MW for Resources Receiving Cost-of-Service Payments for Resilience Services?

The RTO or ISO, as applicable, should determine the appropriate level of resiliency required to adequately provide service, just as the RTO or ISO does for electric energy and capacity. Further, the RTOs and ISOs should be required to allow resources as small as 100 kW to participate and receive compensation for the resiliency they provide. This minimum threshold should balance the RTOs' and ISOs' needs in terms of managing inventories of resilient resources, with the need to maximize the number of qualified eligible resources participating in order to achieve the most efficient portfolio. Smaller resources should be permitted to aggregate in order to participate in the RTO/ISO resiliency programs. This approach is consistent with the Commission's Distributed Energy Resources and Storage NOPR, with respect to distributed energy resources that provide capacity, energy, and ancillary services in RTO and ISO markets.[29]

**6. Is There a Direct Correlation Between the On-site Fuel Amounts and the Level of Resiliency or Reliability?**

Electric generators that are fired by natural gas, coal, and nuclear power require adequate supplies of these fuels to operate. From this perspective, avoidance of fuel supply interruption is one important aspect of resilience and reliability. However, this does not prove that there is a direct correlation between the amount of fuel stockpiled on-site and the level of reliability or resiliency provided. For example, a natural or man-made disaster that can disrupt natural gas pipeline transportation services can similarly cause on-site fuel to become unusable during an emergency event. On-site fuel that is unusable provides no resiliency. Given the wide range of events that may affect fuel supplies, it may not be possible to translate the concept of fuel assurance into specific fuel stockpiling requirements for purposes of directly improving the reliability and resiliency of the grid.

If the Commission disregards these limits to the correlation between fuel assurance and resiliency and decides to require a particular level of on-site fuel supply, its rules should not discriminate against non-coal, non-nuclear, or non-merchant resources. Microgrids supported by certain distributed energy resources technologies can stockpile fuel. CHP units within district energy systems and microgrids operate on natural gas, in some cases coal, and other fuels, including renewables. Many district energy and microgrid resources are "steam-driven

[29] Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, 157 FERC ¶ 61,121, at P 28 (2016) ("The minimum size requirement for electric storage resources to participate in the organized wholesale electric markets must not exceed 100 kW . . . .").

generation resources [that] have low forced and maintenance outage hours . . . and . . . low exposure to fuel supply chain issues."[30] These units are sometimes fueled by alternative sources such as biomass, biogas, and other biofuels. It is possible to stockpile biomass and liquid biofuels on-site. Some units are normally fueled by natural gas but have dual fuel capability, and the alternative fuel (such as fuel oil) can be stockpiled. Some electric generators within district energy systems and microgrids can be powered by landfill gas and these systems may have access to a reliable on-site fuel source that will be available long after a 90-day stockpile of traditional fuel is exhausted. To the extent that on-site fuel stockpiling provides fuel supply assurance that yields resiliency benefits, all of these resources should be eligible for compensation tied to the resiliency benefits they provide in the same manner that this compensation is made available to other resources.

With respect to the minimum duration of the fuel stockpile, IDEA is not aware of any documentation directly supporting the proposed 90-day minimum stockpile requirement. The 90-day threshold has been offered as a criterion that would exclude resources other than "baseload" coal and nuclear units; however, coal-owning utilities have argued that a forty five to sixty-day coal pile is more typical in their industry.[31] Instead of arbitrarily choosing a threshold in order to include or exclude particular types of resources, the Commission should require that any such threshold be determined by the specific needs of the RTO or ISO. One possible way of determining these needs could be identifying potential sources of fuel supply disruptions and requiring probabilistic assessments of how likely these are to occur, how frequently, and their

[30] Letter from Gerry Cauley, Pres. and CEO, NERC, to Hon. Rick Perry, Secretary, DOE, synop. at 4 (May 9, 2017).

[31] Molly Christian, *Industry, experts split on how FERC should respond to DOE grid rule push*, S&P Global Market Intelligence, Sep. 29, 2017 ("'Only nuclear generation has a 90-day or greater standard,' while coal and other baseload generation operate largely on a 45- to 60-day supply, [AEP spokesperson Melissa McHenry] maintained.").

expected duration. Further, all available measures to mitigate these potential disruptions should be identified, which may or may not include fuel stockpiling. The results of this analysis should be used in determining any applicable fuel storage threshold or thresholds.

In the event stockpiling is found to contribute to grid resiliency, eligibility for related compensation should reflect the resiliency provided by each resource. Anecdotally, short fuel supply disruptions appear to occur more frequently than longer disruptions. Therefore, the Commission may find it useful to have more than one stockpile threshold because, for example, a resource with a 45-day stockpile may be able to provide a substantial portion of the resiliency benefits that a resource with a 90-day stockpile could, in the event a quantitative analysis confirms that shorter duration fuel supply interruptions are more likely to occur than longer duration interruptions. Thus, a resource with a 45-day stockpile that contributed, for example, two-thirds of the resiliency benefits provided by a resource with a 90-day stockpile should receive commensurate compensation, rather than none at all.

## IV. CONCLUSION

To the extent that the Commission decides to incorporate resiliency and reliability attributes of resources into wholesale market pricing, it should do so in a non-discriminatory manner and take into account the reliability and resiliency attributes of district energy systems and microgrids. On its face, however, the DOE NOPR is unduly discriminatory and should be rejected. This is because the eligibility requirements for compensation favor certain types of base-load generation without making a rational connection between the requirements and the reliability or resiliency attributes of such resources.

Furthermore, the DOE NOPR leaves fundamental questions unanswered. These include: Is there a problem with the current ISO and RTO markets, or is the proposed rule a “solution” in search of a “problem”? How should resiliency be measured? How should resiliency be priced in wholesale markets? And, which wholesale markets should account for these resiliency attributes (energy markets or capacity markets)? Given these fundamental questions, the Commission should not proceed with a revised rule without at least initiating a technical conference to explore these and other issues and building an appropriate record. In any event, the Commission should issue a revised NOPR only after determining that doing so would provide net benefits to electric customers, rather merely impose additional costs.

Respectfully submitted,

INTERNATIONAL DISTRICT ENERGY ASSOCIATION

By: /s/*Andrea I. Sarmentero Garzón*

Andrea I. Sarmentero Garzón
Gerit F. Hull
Joel L. Greene

Jennings, Strouss & Salmon, P.L.C.
1350 I Street, NW
Suite 810
Washington, DC 20005-3305
(202) 370-4738
asarmentero@jsslaw.com
ghull@jsslaw.com
jgreene@jsslaw.com

*Counsel to IDEA*

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