

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

**Grid Resilience in** )  
**Regional Transmission Organizations and** ) **Docket No. AD18-7-000**  
**Independent System Operators** )  
)

COMMENTS OF ADVANCED ENERGY BUYERS GROUP

May 9, 2018

## I. INTRODUCTION

The Advanced Energy Buyers Group (“AE Buyers Group” or “Buyers Group”) on behalf of large energy users<sup>1</sup> provides these reply comments in response to the Federal Energy Regulatory Commission’s (“FERC” or “Commission”) *Order Terminating Rulemaking Proceedings, Initiating New Proceedings, and establishing Additional Procedures* (“Order”) issued January 8, 2018 in Docket No. AD18-7-000.<sup>2</sup> Members of the AE Buyers Group totaled over \$1 trillion in revenue last year, and consume over 18 terawatt hours (“TWh”) of electricity annually. As companies dependent upon the availability of electricity on a 24-hour basis, we support efforts to ensure access to reliable, resilient, and affordable electricity, and we appreciate the Commission’s measured and thoughtful approach to explore opportunities to enhance the resilience of the bulk power system. In response to the March 9 comments filed with the Commission by Regional Transmission Organizations (“RTOs”) and Independent System Operators (“ISOs”) (collectively, “RTO/ISO Comments”),<sup>3</sup> we write to reiterate that there is no immediate threat to grid resilience that warrants emergency action. Furthermore, we urge the Commission to ensure that any steps taken to enhance system reliance be based on clear metrics and rely on market-based and

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<sup>1</sup> These comments represent the consensus view of the Advanced Energy Buyers Group (information and membership available at <https://info.aee.net/ae-buyers-group>). However, this document does not necessarily reflect the position of any specific member of the AE Buyers Group, and these comments should not be attributed to any individual company or companies participating in the AE Buyers Group.

<sup>2</sup> *Grid Resilience in Regional Transmission Organizations and Independent System Operators*, 162 FERC ¶ 61,012 (2018) (“January 8 Order”).

<sup>3</sup> Comments and Responses of PJM Interconnection, L.L.C., Docket No. AD18-7-000 (filed Mar. 9, 2018) (“PJM Comments”); Response of ISO New England Inc., Docket No. AD18-7-000 (filed Mar. 9, 2018) (“ISO-NE Comments”); Comments of Southwest Power Pool, Inc. on Grid Resilience Issues, Docket No. AD18-7-000 (filed Mar. 9, 2018) (“SPP Comments”); Comments of the California Independent System Operator Corporation in Response to the Commission’s Request for Comments about System Resiliency and Threats to Resilience, Docket No. AD18-7-000 (filed Mar. 9, 2018) (“CAISO Comments”); Responses of the Midcontinent Independent System Operator, Inc., Docket No. AD18-7-000 (filed Mar. 9, 2018) (“MISO Comments”); Response of the New York Independent System Operator, Inc., Docket No. AD18-7-000 (filed Mar. 9, 2018) (“NYISO Comments”).

technology-neutral solutions that reward innovation and recognize and foster resilience-boosting actions by customers such as our companies.

## **II. ABOUT THE ADVANCED ENERGY BUYERS GROUP**

The Advanced Energy Buyers Group is a business-led coalition of large energy users engaging on policies to expand opportunities to procure energy that is secure, clean, and affordable. Members of the Buyers Group are market leaders and major employers spanning different industry segments, including technology, retail, and manufacturing. Our companies are among the 71% of Fortune 100 companies and 43% of Fortune 500 companies that have established renewable and/or climate targets as part of our corporate sustainability commitments. We share a common interest in expanding our use of advanced energy, such as renewable energy like wind, solar, geothermal, and hydropower; demand-side resources like energy efficiency, demand response, and energy storage; and onsite generation from solar, advanced natural gas turbines, and fuel cells.

In 2017, members of the AE Buyers Group totaled over \$1 trillion in revenue and collectively consumed over 18 TWh of electricity, including over 11 TWh hours of renewable electricity, equivalent to the electricity sales for the states of North Dakota and Delaware, respectively.

## **III. COMMENTS**

### **A. The AE Buyers Group agrees with the majority of RTOs/ISOs that the grid is not facing imminent threats to system resilience that warrant emergency Commission action.**

The AE Buyers Group maintains its assessment that the grid is not facing imminent threats to system resilience,<sup>4</sup> a position we initially communicated to the Commission in response to the Grid

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<sup>4</sup> See Initial Comments of Advanced Energy Buyers Group, on the DOE NOPR at 9-20, Docket No. RM18-1-000 (filed Oct. 23, 2017).

Resiliency Pricing Rule proposed by the Department of Energy (“DOE”) in a Notice of Proposed Rulemaking (“NOPR”) in Docket No. RM18-1-000.<sup>5</sup> Taken as a whole, the RTO/ISO Comments in this docket support the conclusion that there is no imminent threat to grid resilience that would warrant an emergency Commission response.

Given our dependence upon reliable and resilient electricity, and the consequences to our businesses of a loss of electricity supply, members of the AE Buyers Group have become sophisticated consumers and energy market participants who carefully monitor and analyze any threats to this supply. The electricity sector is certainly in transition, with new generation dominated by additions of natural gas combined cycle facilities and renewable energy facilities, and retirements dominated by coal and nuclear power plants. However, grid operators and regulators are well equipped to handle this transition and are already making improvements to reliability and resilience. While there can always be incremental improvements in reliability and resilience, it is our view as engaged and highly invested consumers that the resilience of the electricity system is not in a state of emergency.

Numerous recent assessments of the reliability and resilience of the bulk power system (“BPS”)—including assessments cited in DOE’s NOPR—have concluded that the state of the electricity system is sound, and that it is successfully adjusting to a shifting resource mix. A summary document sent to DOE by the North American Electric Reliability Corporation (“NERC”) in May, which has since been made public, describes some of the challenges facing the electric grid, but does not identify a reliability or resilience crisis in need of emergency, out-of-

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<sup>5</sup> Department of Energy, Grid Resiliency Pricing Rule, Notice of Proposed Rulemaking, Docket No. RM17-3-000 (hereafter “DOE NOPR”).

market action.<sup>6</sup> In fact, NERC’s overarching conclusion is that the state of the electricity system is sound; NERC recently testified that “even with all the changes underway, the BPS remains highly reliable and resilient, showing improved reliable performance year over year.”<sup>7</sup> NERC also expressed confidence that the system would continue to perform well despite changes to the generation mix, stating, “With appropriate insight, careful planning, and support, I am confident the electricity sector will continue to navigate these changes in a manner that results in enhanced reliability and resilience.”<sup>8</sup>

NERC’s conclusion that there is no reliability or resilience emergency is consistent with other assessments of the reliability and resilience of the electric grid, including a recent report by DOE. In August, DOE released the *Staff Report on Electricity Markets and Reliability* (“DOE Staff Report”) which concluded that “reliability is adequate today despite the retirement of 11 percent of the generating capacity available in 2002, as significant additions from natural gas, wind, and solar have come online since then.”<sup>9</sup>

Indeed, the RTO/ISO Comments reiterate this confidence in the resilience of the electricity system and in their ability to maintain reliability and resilience through existing processes.<sup>10</sup> Only

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<sup>6</sup> NERC, *Letter to Secretary Rick Perry*, (May 9, 2017), available at [https://www.eenews.net/assets/2017/10/03/document\\_ew\\_01.pdf](https://www.eenews.net/assets/2017/10/03/document_ew_01.pdf).

<sup>7</sup> Gerry W. Cauley, Direct Testimony before the Subcommittee on Energy, House Committee on Energy and Commerce, “Powering America: Defining Reliability in a Transforming Electricity Industry” (Sept. 14, 2017), available at <http://www.nerc.com/news/Documents/HEC9-14-17%20Cauley%20Testimony%20Final.pdf>, at 1.

<sup>8</sup> *Id.*

<sup>9</sup> Department of Energy, *Staff Report to the Secretary on Electricity Markets and Reliability*, 63-64 (August 2017) available at [https://energy.gov/sites/prod/files/2017/08/f36/Staff%20Report%20on%20Electricity%20Markets%20and%20Reliability\\_0.pdf](https://energy.gov/sites/prod/files/2017/08/f36/Staff%20Report%20on%20Electricity%20Markets%20and%20Reliability_0.pdf).

<sup>10</sup> See CAISO Comments at 6 (“[E]fforts in the CAISO balancing authority area have produced a robust and diverse infrastructure and [a] ‘set of tools’ that have helped the CAISO to remain reliable and resilient in the face of significant threats . . . .”); MISO Comments at 48-49 (“At this time, MISO has not identified any other major market-based construct modifications necessary to bolster resilience . . . . Through the Market Roadmap process, MISO and our stakeholders continue ongoing evaluations of energy market design and performance and the

PJM Interconnection, L.L.C. (“PJM”) asserts that directed Commission action beyond ongoing efforts may be needed, but it provides no evidence that this is the case.<sup>11</sup> Given that there is no demonstrated or imminent threat to system resilience, the AE Buyers Group urges the Commission against taking immediate or emergency actions that would circumvent stakeholder processes and/or rely on out-of-market solutions.

Should the Commission determine that it is appropriate to continue its investigation of grid resilience, the Buyers Group encourages FERC to maintain an ongoing stakeholder process that includes opportunities for further stakeholder input on the concept of resilience, the current status of grid resilience, and any proposed solutions to enhance system resilience. Likewise, the Commission should allow RTOs/ISOs to continue their own stakeholder processes to explore the same topics.

**B. For any future actions to improve grid resilience moving forward, the AE Buyers Group encourages FERC and RTOs/ISOs to adopt a clear, metrics-based definition of resilience and to rely on market-based, technology-neutral approaches to ensure that system resilience standards are met cost-effectively.**

Should FERC determine that it is appropriate to move forward with any steps to enhance grid resilience, the AE Buyers Group strongly urges the Commission to ensure that such measures are based on a clear standard for resilience and that they balance costs and benefits and rely on market-based, technology-neutral approaches.

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practices of other best-in-class electric market performers. Base on this process, MISO identifies ways to improve performance and increase value to its member markets.”); ISO-NE Comments at 2 (“ISO-NE is already actively engaged with regional stakeholders on the region’s fuel-security risks, and has established a process to discuss market-based solutions to address this risk. . . . Given the complexity of the problem, ISO-NE believes it will be necessary to allow the region sufficient time . . . to develop a solution and test its robustness through New England’s established stakeholder process.”); NYISO Comments at 35 (“The NYISO remains confident in the ability of its shared governance process to develop well-designed market rule changes and process enhancements to propel the wholesale markets forward and continue their delivery of substantial benefits to the State’s consumers.”).

<sup>11</sup> PJM Comments at 4.

**i. FERC and RTOs/ISOs should adopt a clear definition of resilience that will support desired outcomes.**

In its January 8 Order, FERC requests input on the definition of resilience. The Commission proposes as its definition, “The ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event.”<sup>12</sup> The AE Buyers Group agrees with this definition, but also notes that this definition falls short of providing a measurable standard that could form the basis of future actions.

In particular, the AE Buyers Group is concerned that the concept of resilience may be applied as a justification for rewarding certain fuel or plant types, in particular through DOE’s proposed Grid Resilience Pricing Rule. As our comments to the Commission opposing DOE’s proposal made clear, “the AE Buyers Group does not share DOE’s specific concern regarding the resilience implications of a decline in facilities with long-term onsite fuel supply.”<sup>13</sup> A comprehensive definition of resilience would ensure that the concept of resilience is not applied inappropriately in support of specific fuel or plant types that are not indispensable to maintain grid resilience, even if they can play a role in supporting system resilience.

Instead, the AE Buyers Group recommends that FERC’s definition of resilience be accompanied by clear standards that set a foundation for technology-neutral, market-based solutions, as described in more detail below. Specifically, to ensure that a range of technologies are able to contribute under a future grid resilience standard, such a standard should be based on

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<sup>12</sup> January 8 Order at 23 (*citing Critical Infrastructure Resilience Final Report and Recommendations*, National Infrastructure Advisory Council, at 8 (Sept. 8, 2009)).

<sup>13</sup> *See* Initial Comments of Advanced Energy Buyers Group, on the DOE NOPR at 16, Docket No. RM18-1-000 (filed Oct. 23, 2017).

services and characteristics that support resilience (e.g., flexibility, fast ramping, fuel security) and avoid targeting specific technologies, fuel types, or plant-specific attributes (e.g., fuel type, unit type).

Basing resilience standards around target outcomes is key to ensure that actions taken to meet the standards will contribute to those desired results. Furthermore, defining a set of services and characteristics that support system resilience may uncover opportunities to improve the existing market-based delivery of necessary grid services, and will ensure that further steps to enhance resilience are only taken if they are not already supported by existing, well-functioning market mechanisms.

**ii. The Commission and RTOs/ISOs should balance the costs and benefits of increased system resilience.**

Members of the AE Buyers Group include technology companies, manufacturers, and retailers—all sectors heavily reliant upon a reliable and resilient source of electricity. Our companies require a steady supply of electricity on a 24-hour basis, 365 days a year, and we pay a significant price for disruptions in service, whether they be small disturbances to the distribution system or large outages of the BPS. Estimates place the cost of infrastructure failures for large enterprises at \$100,000 per hour, and for many of our businesses the costs are much higher.<sup>14</sup> However, the BPS will never be completely immune from outages caused by weather or other sudden unanticipated events, and even if that perfect standard were achievable, our businesses and other consumers would not place infinite value (i.e., be willing to pay *any price*) on attaining it.<sup>15</sup>

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<sup>14</sup> Eaton, *Blackout Tracker: United States Annual Report 2016* (2017), available at <http://electricalsector.eaton.com/forms/BlackoutTrackerAnnualReport>, at 6.

<sup>15</sup> Indeed, as we will discuss in more detail in Section C, below, our companies and other customers are taking steps to mitigate the impact of system disruptions.

Therefore, for any steps taken to enhance system resilience, the Buyers Group encourages the Commission and RTOs/ISOs to balance the costs and benefits to customers.

The need for balance when addressing grid resilience is reflected in the recommendations of a comprehensive assessment of the nation's resilience, ordered by Congress in its 2014 appropriations to DOE and published by the National Academies of Sciences, Engineering, and Medicine in 2017. This report warned: "The system's reliability and resilience can be improved but never made perfect. Thus, system owners, operators, and regulators must prioritize their investments based on potential benefits."<sup>16</sup> The AE Buyers Group emphatically agrees with this finding.

Across the country, commercial and industrial consumers account for approximately 62% of U.S. electricity consumption, equivalent to over \$200 billion in 2016, well over half of which is produced and consumed within FERC-jurisdictional organized wholesale markets.<sup>17</sup> As noted previously, members of the AE Buyers Group collectively consume over 18 TWh of electricity annually, meaning that even a small increase in the cost of electricity translates to a significant increase in our cost of doing business. Money that goes toward electricity could instead go to new employees, or more research and development. Collectively, the companies active in the AE Buyers Group invest billions of dollars each year in new facilities, employees, services, and products. Increased operating costs from higher electricity prices directly impacts our businesses' ability to grow and innovate.

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<sup>16</sup> National Academies of Sciences, Engineering, and Medicine, *Enhancing the Resilience of the Nation's Electricity System* (2017) Washington, DC: The National Academies Press, available at <https://doi.org/10.17226/24836>.

<sup>17</sup> Commercial customers accounted for 1,359,617 million kWh and industrial customers accounted for 936,269 million kWh in 2016, out of 3,710,779 kWh total retail sales of electricity. Cost estimate is based on average retail rate for commercial customers (10.37 cents per kWh) and industrial customers (6.75 cents per kWh) in 2016. See U.S. Energy Information Administration (EIA), *Electricity Data Browser*, <https://www.eia.gov/electricity/data/browser/>.

Failure to account for potential costs and benefits when considering options to increase system resilience creates a risk of inefficient and unnecessarily costly investments that will be passed along to electricity consumers, including members of the AE Buyers Group. For example, the cost-based compensation originally proposed in DOE's NOPR would have resulted in massive cost increases, but included only a descriptive assessment of expected costs and benefits.<sup>18</sup> An initial analysis of DOE's proposal by ICF estimated cost increases of as much as \$3.8 billion annually, or \$53 billion between now and 2030. This estimate assumed no new capital expenditures at existing plants, and only accounted for plants at risk of retirement. The actual cost impacts would likely have been much greater, depending on how many plant operators ultimately opted for cost-of-service regulation over competition in the wholesale energy and capacity markets, and how the markets themselves would have reacted to a significant amount of capacity being suddenly guaranteed cost recovery.<sup>19</sup> Indeed, another assessment of the NOPR estimated the cost at up to \$14 billion annually.<sup>20</sup>

Without considering alternative, less-costly paths (including market-based approaches, as described in the next section), and without assessing whether the potential benefits would justify the cost, such a pathway to increase grid resilience would have been imprudent. The AE Buyers Group encourages the Commission and RTOs/ISOs against taking any steps to improve grid resilience without first analyzing, quantifying, and balancing the potential costs and benefits.

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<sup>18</sup> The NOPR does include a quantification of the cost to comply, e.g., to provide information and file tariffs, but does not quantify the expected cost of the regulation itself. DOE NOPR at 14-15.

<sup>19</sup> ICF analysis, as reported in RTO Insider, *ICF Analysis: DOE NOPR Cost Could near \$4B/Year* (October 4, 2017), <https://www.rtoinsider.com/icf-doe-nopr-76642/>.

<sup>20</sup> Sierra Club, *New Analysis Finds Dramatic Costs of Perry's Directive to FERC*, (Oct. 16, 2017) available at <http://www.sierraclub.org/press-releases/2017/10/new-analysis-finds-dramatic-costs-perrys-directive-ferc>.

**iii. Market-based solutions will preserve the competitive market environment, ensuring efficient outcomes and avoiding undue harm to our businesses.**

Wholesale markets have been very successful at accurately discovering the value of electricity production and sending efficient price signals to generators and consumers to deliver the most cost-efficient market supply outcomes. The cost-saving benefits of competitive wholesale markets have been confirmed by independent analysis and by the RTOs and ISOs, including PJM and the Midcontinent Independent System Operator (“MISO”).<sup>21</sup> Clear and accurate prices in a stable policy environment are critical to enabling the development and deployment of new energy technologies that help advance economic growth while still meeting customer needs for electricity that is both reliable and resilient.

Wholesale markets have relied on market-based approaches to meet key reliability standards, such as resource adequacy, and to deliver key ancillary services such as voltage support and frequency control. A similar approach of establishing clear standards for system resilience and relying on market-based approaches (either new market mechanisms or existing approaches) to meet those standards would be consistent with past practice and ensure cost-effective improvements in system resilience.

Injecting new command-and-control or cost-of-service-based regulation and rates into this market system would, in contrast, undermine the accuracy of these price signals and result in

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<sup>21</sup> See Steve Cicala, *Imperfect Markets versus Imperfect Regulation in U.S. Electricity Generation*, University of Chicago (Jan. 2017), available at [http://home.uchicago.edu/~scicala/papers/elec\\_gov\\_v\\_mkt\\_draft\\_2.pdf](http://home.uchicago.edu/~scicala/papers/elec_gov_v_mkt_draft_2.pdf), concluding, “markets reduce production costs by \$3B per year by reallocating output among existing power plants,” with some of these savings coming from a 20% reduction in the cost of operating uneconomic plants due to a 10% reduction in utilization; PJM Interconnection, *PJM Value Proposition*, <http://www.pjm.com/about-pjm/value-proposition.aspx>, estimating a \$2.8 to \$3.1 billion net annual benefit to customers from PJM’s operation of the competitive regional wholesale market, including \$600 million in annual savings due to enabling “less efficient generation resources to retire and to be replaced with more efficient, less costly, plants”; and, MISO, *Value Proposition*, <https://www.misoenergy.org/WhatWeDo/ValueProposition/Pages/ValueProposition.aspx>, finding that in 2016 MISO, “provided between \$2.6 billion and \$3.3 billion in regional benefits, driven by enhanced reliability, more efficient use of the region’s existing transmission and generation assets, and a reduced need for new assets.”

inefficient market outcomes and reduced investor confidence. Further, any distortions in wholesale markets would have direct consequences for our businesses. Specifically, in addition to our perspective as consumers highly dependent on a reliable, resilient, and affordable supply of electricity, our companies are also active participants in the wholesale electricity system, pursuing clean energy projects to meet our corporate energy and sustainability targets and to control our electricity costs. In the competitive wholesale markets regulated by FERC, we are taking full advantage of the choice afforded to us as customers to pursue long-term contracts with clean energy installations. Any response to resilience that relies on inserting new cost-based rates into existing wholesale markets, or that provides cost-of-service support for uneconomic units without material benefit to the energy system, would create distortionary effects that will directly harm our existing energy supply contracts and limit our ability to pursue such transactions in the future.

In contrast, a market-based approach would enable efficient, technology-neutral outcomes that appropriately balance the costs of increased resilience against the benefits of attaining a certain desired or optimal standard. Any efforts to further strengthen grid resilience should therefore make use of market principles to encourage innovation and competition, calling upon the full suite of available options and allowing cost and performance to serve as the metric for success.

**iv. FERC should ensure that any response to system resilience is technology-neutral and innovation-focused.**

Should FERC or the RTOs/ISOs move forward with steps to improve grid resilience, the AE Buyers Group encourages the Commission to take into account the full suite of available solutions to make the electricity system not only more reliable and resilient, but also more secure, responsive, innovative, and affordable. These technologies and services include microgrids, advanced metering, distributed energy resources, energy storage, demand response, transmission,

and smart grid technologies like synchrophasors and distribution automation. All of these solutions and many others—including operational changes and emerging technologies—have an important role to play in the reliability and resilience of our future electricity system, and should be allowed to compete under any future market-based approach to address system resilience.

Importantly, we note that many different solutions played a key role in strengthening the resilience of the grid during the recent extreme events. Wind energy and demand response resources bolstered system resilience during the 2014 Polar Vortex, and during Hurricane Irma Tampa Electric (“TECO”) dispatched 40 megawatts of demand response resources while it restored parts of the transmission and distribution network.<sup>22</sup> The EIA credited specific investments by utilities for preventing worse damage during Hurricane Irma, including deployment of smart grid technologies to “provide more timely and more accurate information about outages.... [to] help utilities better target restoration efforts.”<sup>23</sup>

Targeted deployment of these and other technologies is key to maintaining reliability and resilience cost-competitively as our electricity system continues to evolve. In addition to allowing existing technologies and services to compete to provide needed resilience services, a technology-neutral approach will allow new technologies and services to participate, encouraging innovation. To ensure least-cost outcomes, any steps taken by the Commission or RTOs/ISOs to improve reliability and resilience must set definitions, standards, and market rules that take into account the full range of solutions available and that avoid unduly favoring specific technologies or solutions.

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<sup>22</sup> Sarah McAuley, “Following Hurricane Irma, Demand Response Stepped Up Amid Efforts to Restore Power,” EnerNOC (Sept. 26, 2017), <https://energysmart.enernoc.com/following-hurricane-irma-demand-response-stepped-amid-efforts-restore-power>.

<sup>23</sup> U.S. EIA, “Hurricane Irma cut power to nearly two-thirds of Florida’s electricity customers” (Sept. 20, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=32992>.

**C. Actions of customers such as members of the AE Buyers Group that contribute to system resilience should be recognized, incented, and rewarded.**

As customers, members of the AE Buyers Group are committed to playing a role in strengthening the grid and improving the resilience of our own operations, and we have been very active at the regional and local level in deploying technologies and participating in programs and services that will improve reliability and resilience while bringing other benefits. Importantly, customer-driven investments at locations that place a high value on resilience— such as hospitals, military facilities, and data centers—will efficiently lower the overall societal cost of grid disruptions and ensure that the costs and benefits of resilience improvements are brought into balance efficiently. Ignoring the contributions of such customer actions, especially when they benefit the system as a whole, will reduce the potential contribution of customers to system resilience, while forcing those customers that do invest in resilience improvements to pay twice for resilience benefits. Therefore, any steps taken by FERC or the RTOs/ISOs to enhance system resilience should send market signals to recognize, incent, and reward customer-driven resilience investments.

Members of the AE Buyers Group and other customers have already made many investments in grid resilience and in the resilience of our own facilities, and we anticipate increased opportunities for future investments as technologies and services continue to improve in price and performance. To name a few recent examples (including but not limited to examples from Buyers Group members):

- Over two-dozen Walmart stores in California have installed advanced energy storage systems to shave the retailer’s peak load, balance out on-site solar generation with store

consumption, and help the local utility, Southern California Edison, reduce peak demand on the grid in conjunction with a broader grid modernization plan.<sup>24</sup>

- A Microsoft data center in Cheyenne, Wyoming relies on advanced natural gas turbines for backup support, which are available to the local utility to draw upon in times of need.<sup>25</sup>
- Over 800 Target stores in 31 states participate in demand-response programs, reducing peak demand and helping to keep the electric system in balance while also delivering operational savings.<sup>26</sup>
- Data centers run by Equinix, Apple, eBay, and others rely on fuel cells to provide backup during times of grid failure.<sup>27</sup>
- The U.S. Department of Defense has developed numerous microgrids running on different combinations of energy storage, solar and wind power, gas turbines, hydropower, and fuel cells to ensure continued operation at key facilities during blackouts.<sup>28</sup>

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<sup>24</sup> Jeff St. John, “Wal-Mart, Advanced Microgrid Solutions to Turn Big-Box Stores Into Hybrid Electric Buildings,” Greentech Media (April 11, 2017), available at <https://www.greentechmedia.com/articles/read/wal-mart-to-turn-big-box-stores-into-hybrid-electric-buildings#gs.MEHYBsw>.

<sup>25</sup> Athima Chansanchai, “As datacenters grow, Microsoft’s innovative approach invests in more clean energy to power them,” Microsoft (Nov. 14, 2016), <https://news.microsoft.com/features/as-datacenters-grow-microsofts-innovative-approach-invests-in-more-clean-energy-to-power-them/>.

<sup>26</sup> Deborah Abrams Kaplan, “How Target uses demand response to cut energy, supply chain costs,” Supply Chain Dive (Sept. 21, 2017), <https://www.supplychaindive.com/news/Target-demand-response-supply-chain-costs/505359/>.

<sup>27</sup> Yevgeniy Sverdlik, “Equinix Makes Big Bet on Fuel Cell-Powered Data Centers,” Data Center Knowledge (Aug. 16, 2017), <http://www.datacenterknowledge.com/energy/equinix-makes-big-bet-fuel-cell-powered-data-centers>.

<sup>28</sup> Microgrid Projects, “U.S. Military Microgrids,” available at <http://microgridprojects.com/military-microgrid-army-navy-air-force-microgrids-drivers/>.

Valuing the contribution of these solutions to grid resilience through a technology-neutral, market-based approach will send accurate price signals to incent customers to take more action. Failure to do so, in contrast, will send the opposite signal while forcing those customers who do invest in resilience solutions to pay twice for resilience benefits.

#### **IV. CONCLUSION**

As companies dependent upon the availability of electricity on a 24-hour basis, the AE Buyers Group supports efforts to ensure access to reliable, resilient, and affordable electricity. However, based on overwhelming evidence, we find that there is no immediate threat to grid resilience that warrants emergency action. Should the Commission and RTOs/ISOs take continued steps to address and improve system resilience, the AE Buyers Group urges the Commission to ensure that such efforts be based on clear metrics and that they balance costs and benefits, rely on market-based and technology-neutral solutions, reward innovation, and recognize and incent resilience-boosting actions by electricity customers such as our companies.

Respectfully submitted,

**The Advanced Energy Buyers Group**

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