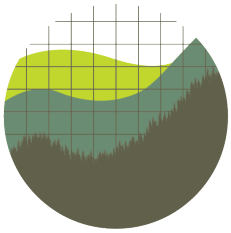

Institute *for*
Policy Integrity
NEW YORK UNIVERSITY SCHOOL OF LAW

January 30, 2017

Federal Energy Regulatory Commission

VIA ELECTRONIC SUBMISSION

Attn: Docket Nos. RM16-23-000; AD16-20-000

Re: Comments on Proposed Rulemaking for Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, 18 C.F.R. pt. 35 (Nov. 17, 2016)

The Institute for Policy Integrity at New York University School of Law[1] ("Policy Integrity") respectfully submits the following comments[2] on the Federal Energy Regulatory Commission's ("the Commission") proposed rulemaking for electric storage participation in markets operated by regional transmission organizations and independent system operators.[3] Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in fields of administrative law, economics, and public policy.

In November, the Commission issued a notice of proposed rulemaking ("NOPR") aimed at removing barriers currently hindering electric storage resources and distributed energy resource aggregations from participating in the organized wholesale electric markets. The proposed rule would require regional transmission organizations ("RTOs") and independent system operators ("ISOs") to revise their tariffs to accommodate the participation of these resources.

The Commission recognizes the benefits of expanded resource participation, and its proposals will promote greater overall efficiency in the wholesale electric markets. These beneficial proposals include allowing electric storage resources to participate fully as wholesale buyers and sellers and promoting technology neutrality in revised tariffs in order to facilitate distributed energy resource participation in the wholesale markets. In order to fully realize the benefits of participation of electric storage and distributed generation in wholesale markets, the Commission should also:

[1] No part of this document purports to present New York University School of Law's views, if any.
[2] These comments incorporate by reference into the record all of the documents cited herein.
[3] 157 FERC ¶ 61,121 (Nov. 17, 2016).

- Explicitly describe the nature and extent of the benefits to the wholesale market for which the Commission is compensating distributed energy resource aggregations, while allowing states to compensate for additional distribution-side benefits, in order to help ensure complete, but not duplicate, compensation for the services these resources provide;

- Eliminate location-based constraints on resource participation, but recognize the importance of location in determining the full value of services these resources provide to wholesale markets and ensuring effective dispatch;

- Encourage coordination between not only RTOs/ISOs, distribution utilities and resource aggregators, but also between RTOs/ISOs and state regulators; and

- Promote the use of advanced metering infrastructure ("AMI") technology to ensure that distributed energy aggregators are compensated fully and resources can be dispatched in accordance with their most efficient use.

I. The Commission's proposal to accommodate broad participation of electric storage resources and distributed energy resource aggregations in organized wholesale electric markets increases market efficiency

Changing market rules to allow participation of electric storage resources and distributed energy resource aggregations in the capacity, energy and ancillary services markets will encourage beneficial competition on the organized wholesale electric markets.

The Commission's proposed rule is legally grounded in the Supreme Court's recent decision in *FERC v. EPSA*.[4] Requiring RTOs/ISOs to revise their tariffs to accommodate participation of electric storage resources and distributed energy aggregations would broadly affect the wholesale electric markets and thus, the Commission's actions here lie permissibly within its jurisdiction under the Federal Power Act.[5] In order to fulfill its duty to regulate wholesale markets as efficiently as possible, the Commission should consider the "full panoply of market participants," whose participation will lead to robust and efficient markets.[6]

Many benefits stem from increased participation of these resources in the wholesale market. In addition to fostering greater competition, and thereby improving the efficiency of the wholesale electric markets, expanding participation of electric storage resources would "reduce[] the burden on the transmission system" by allowing more efficient operation of large thermal generators, better integration of variable resources, and greater overall reliability in the wholesale markets.[7]

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[4] FERC v. Elec. Power Supply Ass'n, 136 S. Ct. 760 (2016), *as revised* (Jan. 28, 2016).
[5] *Id.* at 766.
[6] Denise A. Grab, *Balancing on the Grid Edge: Regulating for Economic Efficiency in the Wake of FERC v. EPSA*, 40 HARV. ENVTL. L. REV. F. 32, 34 (2016), *available at* http://policyintegrity.org/files/publications/Grab.pdf.
[7] 157 FERC ¶ 61,121 (Nov. 17, 2016), at 17.

The Commission correctly identifies many of the benefits that enhanced wholesale competition would yield. Increased competition in the wholesale electric markets would promote technological innovation, simplify resource entry and exit, and facilitate efficient resource operation, while also properly allocating risk among consumers and producers. The Commission also recognizes that enhanced wholesale competition would lead to just and reasonable rates for wholesale electric services, reducing the risk of discriminatory or preferential rates.[8]

Expanding participation to allow for increased distributed generation makes the electric grid more resilient.[9] Improving and diversifying the resource portfolio in the wholesale market can lead to increased "storage capable of providing resiliency in the event of a significant emergency or contingency" like a natural disaster or extreme weather event.[10]

An added benefit of expanding participation to electric storage resources and distributed energy resource aggregations is the long-term savings for utilities and states. Increased reliance on these new technologies can reduce dependence on expensive transmission infrastructure.[11] Utilities and states may defer or completely avoid large capital investments in these costly, traditional technologies as the electric wholesale markets become more efficient through increased participation of electric storage resources.[12]

II. The Commission should proceed with removing barriers to allow electric storage resources to participate in organized wholesale electric markets as both wholesale sellers and wholesale buyers

Allowing electric storage resources to participate as both wholesale sellers and wholesale buyers improves overall market efficiency, allowing these resources to be dispatched in accordance with their most economically efficient use. The Commission has correctly identified this, recognizing that "the market functions effectively only when both supply and demand can meaningfully participate."[13]

Permitting electric storage resources to participate on both the demand side and supply side allows for greater grid efficiency through full utilization of these rapidly developing, bi-directionally capable resources. As the Commission has previously recognized, expanding the pool of resources capable of participating in the wholesale markets will lead to increased market competition, thereby placing "downward pressure" on the market

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[8] 157 FERC ¶ 61,121 (Nov. 17, 2016), at 16-17.
[9] Joel B. Eisen, *Who Regulates the Smart Grid?: FERC's Authority over Demand Response Compensation in Wholesale Electric Markets*, 4 SAN DIEGO J. CLIMATE & ENERGY L. 69, 101 (2012-13).
[10] Andrew H. Meyer, *Federal Regulatory Barriers to Grid-Deployed Energy Storage*, 39 Colum. J. Envtl. L. 479, 548 (2014).
[11] Richard L. Revesz & Burcin Unel, *Managing the Future of the Electricity Grid: Distributed Generation and Net Metering*, 41 HARV. ENVTL. L. REV. (forthcoming 2017) (manuscript at 38), *available at* http://policyintegrity.org/files/publications/ManagingFutureElectricityGrid.pdf.
[12] Meyer, *supra* note 10, at 502.
[13] 157 FERC ¶ 61,121 (Nov. 17, 2016), at 61.

price of wholesale electricity.[14] When electric storage resources are allowed to participate to the full extent of their bi-directional capabilities, the RTOs/ISOs can dispatch the resources more efficiently, as either supply or demand depending on the relationship between the market-clearing price and the bid made by the resource.[15] In utilizing electric storage resources in this manner, they can be efficiently dispatched in accordance with the highest value service they can provide to the grid.

When electric storage resources are allowed to integrate into the wholesale electric markets, they can also reduce costs during peak energy generation periods. System operators have traditionally relied on thermal peaker plants to meet demand in peak energy periods.[16] The comparatively small proportion of peak power periods in relation to overall energy demand means peaker plants tend to be both costly and underutilized.[17] While, traditional generation is more expensive during peak demand, electric storage resources can be quickly dispatched during peak periods through injecting stored energy into the grid, reducing the need to rely on less efficient traditional generators.[18] In utilizing cheaper, rapidly dispatchable off peak energy from energy storage during peak periods and changed demand, electric storage resources can also reduce price volatility by stabilizing market-clearing prices.[19]

The increased participation of energy storage resources also improves overall reliability on the electric grid, because the resources can quickly and effectively inject existing energy back into the grid in order to meet increased demand in energy and capacity markets.[20] Electric storage resources are also beneficial in the ancillary service markets, and can reduce the need for cost-intensive investment in electric transmission infrastructure, given the proximity of such sources to the grid.[21]

III. The Commission's proposed rule will eliminate barriers faced by distributed energy resource aggregations in the organized wholesale electric markets, thereby allowing these resources to be dispatched according to their most efficient use

Distributed energy resource aggregations are rapidly evolving, and the barriers to participation in the organized wholesale electric markets that these resources currently face prohibit them from being dispatched according to their most efficient use.

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[14] Sharon B. Jacobs, *The Energy Prosumer*, 43 ECOLOGY L.Q. 519, 563-64 (2016), *citing* 134 FERC pt. 61,187 at 7 (2011).
[15] 157 FERC ¶ 61,121 (Nov. 17, 2016), at 61.
[16] Herman K. Trabish, *A Silver Bullet? Inside FERC's Landmark Energy Storage Rulemaking*, UTILITY DIVE (Jan. 10, 2017), *available at* http://www.utilitydive.com/news/a-silver-bullet-inside-fercs-landmark-energy-storage-rulemaking/433559/
[17] *Id.*
[18] Keith Dennis, *Community Storage—Coming to a Home Near You*, 154 NO. 2 PUB. UTIL. FORT. 22, 26 (2016).
[19] Meyer, *supra* note 10, at 501; Amy L. Stein, *Reconsidering Regulatory Uncertainty: Making a Case for Energy Storage*, 41 FLA. ST. U. L. REV. 697, 712 (2014).
[20] Amy L. Stein, *Distributed Reliability*, 87 U. COLO. L. REV. 887, 889-90 (2016).
[21] Meyer, *supra* note 10, at 500.

Distributed energy resource aggregations reduce costs of energy that would otherwise be generated, often less efficiently and more expensively, by a traditional generator to meet consumer demand. Distributed generation systems can also "avoid" costs by reducing the amount of energy a customer needs from the grid, in turn reducing demand and leading to economic savings based on the costs otherwise required to produce such energy.[22]

The value of these economic savings depends on variable costs that would otherwise be required by the displaced resource. These include that resource's efficiency, and costs for fuel, operation and maintenance.

Furthermore, increased reliance on distributed energy resources can reduce costs of electricity lost in transit from generator to end-user. Dependence on distributed energy resource generation can reduce line loss issues inherent in traditional energy distribution, due to the closer proximity of distributed energy resources to end users. This proximity also allows utilities and users to avoid the overall transmission and infrastructure costs of traditional generation.[23]

Assuming distributed energy resources are compensated at the same rate as other generators, increased participation of distributed energy resource aggregations also reduces need for capital investment in new traditional generation projects, which tend to be costly.[24] The flexibility of distributed generation can also promote greater grid resiliency by minimizing or avoiding service interruptions during natural disasters or other extreme events.[25]

The Commission should remain technology-neutral with regard to eligible resources, subject to addressing concerns about duplicate compensation

The Commission should advance its decision to remain technology neutral with regard to resources eligible to participate in distributed energy resource aggregations, instructing RTOs/ISOs to allow broad participation in order to preserve flexibility for the participation of future technologies.

However, the Commission should also ensure that revised tariffs are adequately designed to structure this broad participation to address concerns of duplicate compensation. While the Commission is wise to promote the broadest resource participation possible within distributed energy resource aggregations, it is important to include a constraint that prevents double recovery by these resources.

[22] Revesz & Unel, *supra* note 11, at 37-38.
[23] Revesz & Unel, *supra* note 11, at 38.
[24] *Id.*
[25] Meyer, *supra* note 10.

The Commission should be explicit about the nature of benefits for which it is compensating resources

The Commission should specify the precise nature and value of generation benefits for which they are compensating distributed energy resource aggregations participating in the wholesale electric markets. In addition, the Commission should encourage the RTOs/ISOs to communicate with states to ensure that distributed energy resource aggregations are compensated fully for the benefits they provide. The Commission is correct to recognize the duplicate compensation concern that would arise if these resources were allowed to participate simultaneously in the wholesale market and in other retail compensation programs. However, the Commission should clarify certain language in the proposal, in order to ensure that resources are not undercompensated for the value they provide to the overall grid.

Of particular concern, on page 102 of the NOPR, the Commission states:

> Therefore, to ensure that there is no duplication of compensation, we propose that distributed energy resources that are participating in one or more retail compensation programs such as net metering or another wholesale market participation program will not be eligible to participate in the organized wholesale electric markets as part of a distributed energy resource aggregation.[26]

Taken at face value, this language could be read to prohibit a resource that is participating in a retail compensation program from receiving any compensation from the wholesale market, even if it is being compensated for entirely distinct services in each market. For example, an aggregator of distributed solar resources might be forced to choose between receiving compensation for its sale of electricity into the wholesale grid or receiving compensation through state-based rates for the resiliency benefits the resources provide at the distribution level.

The Commission appropriately recognizes that it is sensible to limit participation in the wholesale markets if distributed energy resources are already "receiving compensation for the same service as part of another program."[27] The Commission has been, and should be, wary of this potential for "double recovery" by resources.[28] The Commission should require RTOs and ISOs to implement such a limitation, which is necessary and appropriate to promoting accurate valuation of services and ensuring good market practices by forbidding double selling of the same service.

However, the Commission should carefully and explicitly detail the precise nature of services for which they are compensating distributed energy resources in the wholesale electric markets. Just as retail compensation programs may fail to account for the full value

[26] 157 FERC ¶ 61,121 (Nov. 17, 2016), at 102.
[27] *Id.* at 101.
[28] Meyer, *supra* note 10, at 532.

of benefits distributed generation provides to the wholesale grid, the Commission's wholesale compensation may also fail to fully account for the benefits that these resources provide on the distribution side. The Commission should be explicit in prohibiting duplicate compensation to a resource for the *same service*. Language like that cited above on p. 102 of the NOPR should be clarified to apply only to specific services that are already compensated in other markets. This way, distributed energy resources will not be forced to choose between markets, forgoing full compensation for the unique benefits they can provide to each. In order to foster market efficiency, the Commission should ensure these resources can receive full value for their services without being dually compensated.

It would be unduly discriminatory and preferential not only to prohibit a distributed energy resource from participating, but also to prevent it from being fully compensated for providing services at the wholesale, bulk power level that it does not provide at the distribution level. The Commission should require RTOs/ISOs to explicitly define the services that distributed energy resource aggregators can receive compensation for at the bulk power level, while allowing resources to continue receiving compensation for distinct services at the distribution level.

This service-based distinction is critical given the unique characteristics of distributed energy resources and energy storage systems, which can provide both generation and transmission services. The Commission should use a market-based approach to compensate for those benefits, like generation, where the competitive market provides an efficient price signal, and can use a cost-based approach to compensate for benefits, like transmission, that are not properly valued by markets. The Commission has faced this diverging approach to compensation for energy services in the past, for example in the context of non-synchronous generators providing reactive power services, [29]and in the early days of reliability must-run agreements, when generators could be compensated at a market-based or cost-based rate depending on the service dispatched.[30]

On January 19, 2017, the Commission issued a clarifying Policy Statement discussing these issues.[31] The Commission provided guidance on "how electric storage resources seeking to receive cost-based rate recovery for certain services (such as transmission or grid support services or to address other needs identified by an RTO/ISO) while also receiving market-based revenues for providing separate market-based rate services could address these concerns" related to double recovery by resources. This statement indicates the Commission's recognition of these issues and the Commission should explicitly incorporate this guidance in its recommendations to RTOs/ISOs in the final rule.

In the Commission's Policy Statement, it identified two administrative precedents related to cost recovery by electric storage resources: *Nevada Hydro*[32] and *Western Grid*.[33] The

[29] 155 FERC ¶ 61,277 (June 16, 2016).
[30] 150 FERC ¶ 61,116 (Feb. 19, 2015).
[31] 158 FERC ¶ 61,051 (Jan. 19, 2017), at 1-2.
[32] The Nev. Hydro Co. Inc, 122 FERC ¶ 61, 272 (2008).
[33] Western Grid Dev., LLC, 130 FERC ¶ 61,056, *reh'g denied*, 133 FERC ¶ 61,029 (2010).

Commission recognized potential confusion resulting from these two precedents but clarified that the precedents did not foreclose the possibility of electric storage resources receiving both cost-based and market-based compensation if they were able to provide separate services to retail and wholesale markets.[34] The Commission clearly stated that it might be possible for an "electric storage resource [to] receive cost-based rate recovery, and, if technically capable, provide market-based services."[35]

The Commission's January 2017 Policy Statement importantly clarifies that electric storage resources can simultaneously provide separate services at cost- and market-based rates,[36] and this should be made clear in the final rule. But, the Commission also correctly acknowledges the complexities inherent in determining how to implement a policy allowing these resources to provide and be compensated for these separate services.[37] Some possibilities the Commission identified are market revenue crediting or market revenue offsets, but there may, as the Commission recognizes, be other approaches for full, but not dual compensation of resources. The Commission should proceed by working with the RTOs/ISOs and encouraging communication with states to identify creative solutions to ensure full and adequate compensation of distributed energy resources.

The Commission should recognize the importance of resource location for determining benefits provided, while eliminating unduly burdensome locational requirements

The Commission should eliminate unduly burdensome locational and informational requirements for distributed energy resource participation,[38] while recognizing that location information remains important for determining certain benefits that accrue within and outside of the Commission's jurisdiction.

Limiting aggregation to those resources located behind the same point of interconnection would undermine the benefits of allowing geographically dispersed resources to aggregate for participation in the wholesale grid. But the Commission should also recognize the importance of location in siting resources and determining the full value of benefits these services can provide. While the Commission is correct to encourage policies that allow broad aggregation of distributed resources without locational constraints for participation, it is crucial that the Commission recognize the importance of resource location in order to determine and fully compensate for the value that distributed resources contribute to the grid.

The Commission provides that the distributed energy resources participating in the wholesale market will be compensated at their locational marginal price ("LMP"). Resources participating in the wholesale are compensated at the LMP to reflect the energy benefit they provide to the grid. The LMP is determined by the market price for power

[34] 158 FERC ¶ 61,051 (Jan. 19, 2017), at 8-9.
[35] 158 FERC ¶ 61,051, at 8.
[36] *Id.*
[37] *Id.*
[38] 157 FERC ¶ 61,121 (Nov. 17, 2016), at 104.

generated at a given location.[39] The LMP is affected by locational and temporal factors, including transmission constraints and is therefore "not equal to the marginal cost of a specific generator."[40] The LMP incudes factors such as costs related to transmission congestion at specific times and locations on the grid,[41] because "if congestion restricts sending lowest-cost electricity to a particular location, higher priced electricity is dispatched and the higher price is reflected in the LMP."[42] Distributed energy resources should be valued for their generation the same way traditional generators are, by LMP, for whatever they inject into the grid. But, as described above, unless resources are adequately compensated on the demand side, it is problematic to limit compensation for distributed energy resources to LMP because that prevents these resources from being fully compensated, separately, for other benefits they provide at the distribution-level.

In addition, the Commission should continue to account for siting of distributed energy resources, at least insofar as resource location may impact grid reliability. Given the unique characteristics of many distributed energy resources, it is possible for distributed generation to negatively impact the electric grid if resources are not dispatched correctly. The Department of Energy has previously recognized this issue, which can depend on factors including the nature of the local distribution utility and of the resource itself.[43] Size and location of resources can, if the resources are not used properly, undermine grid stability.[44] While the intermittency of many distributed energy resources can create grid volatility and ramping issues, these potential impacts can be addressed by the system operator through effective resource management and use of a flexible mix of generation.[45] The Commission should remain aware of these issues and carefully coordinate with RTOs/ISOs, local utilities, and state regulators to ensure resources are managed and dispatched effectively.

Given the importance of ensuring that these resources are both fully compensated for benefits they provide, and dispatched reliably, the Commission should also promote coordination between the RTO/ISO, the resource aggregator, and the distribution utility, as it has recognized in its NOPR.[46] This coordination is crucial to implementing rules to effectuate participation of distributed resources. In addition, the Commission should seek creative solutions to foster coordination between RTOs/ISOs and individual states. As discussed, distributed generation incorporates rapidly evolving technologies and raises new issues, which may straddle multiple jurisdictions and require regulatory collaboration.

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[39] Jacobs, *supra* note 14, at 546.
[40] Eisen, *supra* note 9, at 85.
[41] *Id.*
[42] JAQUELIN COCHRAN ET AL., NAT'L RENEWABLE ENERGY LAB., MARKET EVOLUTION: WHOLESALE ELECTRICITY MARKET DESIGN FOR 21ST CENTURY POWER SYSTEMS, 15 (2013), *available at* http://www.nrel.gov/docs/fy14osti/57477.pdf.
[43] U.S. DEPT. OF ENERGY, THE POTENTIAL BENEFITS OF DISTRIBUTED GENERATION AND RATE-RELATED ISSUES THAT MAY IMPEDE THEIR EXPANSION 2-11 (2007).
[44] *Id.*
[45] N. AM. ELEC. RELIABILITY CORP., POTENTIAL BULK SYSTEM RELIABILITY IMPACTS OF DISTRIBUTED RESOURCES 38, 48 (2011), *available* at http://www.nerc.com/docs/pc/ivgtf/IVGTF_TF-1-8_Reliability-Impact-Distributed-Resources_Final-Draft_2011.pdf.
[46] 157 FERC ¶ 61,121 (Nov. 17, 2016), at 114.

The Commission should encourage use of advanced metering infrastructure

With regard to metering and telemetry requirements for distributed generation,[47] the Commission should recognize the importance of using advanced metering infrastructure ("AMI") so that a resource's injection can be measured and valued separately with two distinct meters. AMI promotes grid efficiency by allowing near real-time monitoring of consumer electricity use.[48]

The identified benefits of market efficiency resulting from increased participation of distributed energy resources cannot be fully achieved without accurate compensation of resources, depending on whether they are injecting or extracting electricity from the grid. Technological improvements in AMI technology is removing barriers to measuring costs and consumption correctly, in turn producing reflective price signals and improving efficiency in the market.[49]

The Commission should find ways to tailor its final rule to encourage resources to use AMI in order to fully realize the benefits of employing these distributed energy resources. The Commission should emphasize the importance of AMI to promote accuracy and efficiency in the wholesale market, by allowing grid inflow and outflow measurements at every price. Additionally, the Commission should promote RTO/ISO appropriation of AMI data from states that are already incorporating the technology into their regulations.

Respectfully submitted,

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[47] 157 FERC ¶ 61,121, at 112.
[48] Samuel J. Harvey, *Smart Meters, Smarter Regulation: Balancing Privacy and Innovation in the Electric Grid*, 61 UCLA L. REV. 2068, 2072 (2014).
[49] *Id.*