UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

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

COMMENTS OF THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

In accordance with the *Notice Inviting Comments* issued by the Commission on October 2, and with the October 11 *Notice of Publication in the Federal Register,* in the above-referenced proceeding, the New York Independent System Operator, Inc. ("NYISO") hereby submits these comments in response to the Secretary of Energy's ("Secretary's") proposed "Grid Resiliency Pricing Rule" (the "NOPR").[1] The NYISO has also prepared responses to all but one of the questions posed by Commission Staff's October 4 information request.[2] In addition, the NYISO is a party to and supports the comments that are being submitted concurrently by the ISO/RTO Council in this docket.

The NYISO's mission includes maintaining and enhancing regional reliability, operating open, fair, and competitive wholesale electricity markets, planning the power system of the future, and providing factual information to policy makers, stakeholders, and investors. The NYISO is also committed to maintaining the integrity of competitive wholesale electric markets to preserve the many benefits that they have provided to consumers. The NYISO has actively facilitated efficient wholesale price formation efforts and performed transmission system planning to maintain reliability as resource mixes have evolved over time. This includes

[1] Department of Energy, Notice of Proposed Rulemaking, *Grid Resiliency Pricing Rule*, 82 Fed. Reg. 46,940 (Oct. 10, 2017) ("NOPR").

[2] *See* the Attachment to these comments which contains the NYISO's responses to all of Staff's questions except for "Other - Question 5" ("Attachment").

exploring the grid "resiliency" issues raised in the NOPR. As discussed below, and in the Attachment,[3] the NYISO's market rules, to a large extent, already value and compensate resources that provide "resiliency" in various ways.

If the Commission decides to act in this docket, it should, as it has in earlier Department of Energy-initiated[4] rulemakings,[5] seek to achieve the Secretary's stated policy objectives but modify the NOPR to reflect current system needs and to develop more practicable solutions. The NYISO cannot support the NOPR's proposed regulatory changes in their current form. The proposed "grid resiliency pricing" rule is flawed and premised on assumptions and statements that are not accurate as they relate to New York. The NOPR does not establish that its proposal is appropriate or that "grid resiliency" issues should be addressed the same way in different regions. The NOPR appears to call for the proliferation of cost-based compensation mechanisms without regard for cost effectiveness or tangible benefits. It therefore threatens serious harm to both markets and consumers. Furthermore, the NOPR's deadlines for ISOs and RTOs to develop and implement compliance filings are unreasonably abbreviated and unworkable.

Through any action in this docket, the Commission should preserve the integrity of existing market designs and accommodate regional differences. Finally, the Commission must give ISOs/RTOs a reasonable amount of time to develop and implement any rule changes.

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[3] *See* Attachment, NYISO Response to "Need for Reform - Question 1."

[4] The Secretary initiated this proceeding under Section 403 of the Department of Energy Organization Act. 42 U.S.C. §7173.

[5] *See* FERC Statutes and Regulations ¶30,701, *Ceiling Prices; Old Gas Pricing Structure*, Order No. 451, (June 6, 1986) at 30,210 (explaining that the Commission was adopting a modified version of a rule first proposed by the Secretary and that its action represented "an endorsement of the objectives set forth in the DOE proposal, modified to recognize the current needs of the natural gas market for regulatory change and the most practical means of meeting those needs.")

I. COMMUNICATIONS AND CORRESPONDENCE

All communications and correspondence concerning these Comments should be served as follows:

Robert E. Fernandez, General Counsel
Raymond Stalter, Director, Regulatory Affairs
Karen G. Gach, Deputy General Counsel
*Alex M. Schnell, Assistant General Counsel/Registered Corporate Counsel
*James H. Sweeney, Senior Attorney
10 Krey Boulevard
Rensselaer, NY 12144
Tel: (518) 356-6000
Fax: (518) 356-8825
aschnell@nyiso.com
jsweeney@nyiso.com

*Person designated for receipt of service.

II. COMMENTS

A. The NOPR's Findings Are Inconsistent with the NYISO's Reliability Analyses, its Experience with Extreme Weather Conditions, and its Current Resource Mix

A central premise of the NOPR is the Secretary's concern that ISO/RTO market rules have driven large scale retirements of "fuel secure" generation which has in turn created a reliability "crisis." The NOPR asserts that, "[i]mmediate action is necessary to ensure fair compensation in order to stop the imminent loss of generators with on-site fuel supplies, and thereby preserve the benefits of generation diversity and avoid the severe consequences that additional shut-downs would have on the electric grid."[6] While the NYISO shares the Secretary's concerns about reliability and "resiliency" as a general proposition, the NOPR's specific findings are not consistent with the NYISO's experience or with conditions in New York.

[6] NOPR at 46,945.

Although the NOPR makes many references to grid "resiliency" it does not adequately develop the concept or define the term. The NYISO looks to the National Infrastructure Advisory Council's definition of "resilience" as "the ability to reduce the magnitude and/or duration of disruptive events."[7] The NYISO understands resiliency to be closely interrelated with reliability as "a means of providing incremental reliability above and beyond that required to maintain the minimum reliable operation of the system."[8] All references by the NYISO to "resilience" and "resiliency" in these comments reflect this understanding.

1. The NYISO Is Not Aware of Any Imminent Threat to Reliability Due to Retirements of "Fuel Secure" Generation

The NYISO is responsible for the reliable operation of the wholesale electric system in New York State. It has a deep understanding of how the wholesale electric system operates day-to-day, frequently conducts operational studies, and engages in comprehensive system and resource planning. The NYISO is not aware of any imminent emergency likely to develop on the wholesale electric system that necessitates drastic and immediate action, particularly in the form proposed in the NOPR.

The NYISO engages in seasonal assessment and preparedness studies to review system operation, available capacity, gas-electric coordination and fuel inventory. In addition, the NYISO conducts reliability planning, economic planning, transmission planning and analyzes the reliability criteria impacts every time a generator in the New York Control Area ("NYCA") deactivates or retires. Recent NYISO analyses have all concluded that all resource adequacy criteria have been satisfied and are expected to continue to be satisfied for the foreseeable future.

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[7] National Infrastructure Advisory Council, *Critical Infrastructure Resilience - Final Report and Recommendations* at 8 (September 8, 2009), available at: https://www.dhs.gov/sites/default/files/publications/niac-critical-infrastructure-resilience-final-report-09-08-09-508.pdf.

[8] *See* Attachment, NYISO Response to "Need for Reform - Question 2."

The NYISO has not identified any imminent threat to reliability in New York from alleged flaws in resiliency pricing.

2. The NYISO Effectively Managed Reliability During the "2014 Polar Vortex" and has Made Changes to Achieve Even Greater Resiliency

The Proposal points to the "2014 Polar Vortex" as a "warning that the current and scheduled retirements of fuel-secure plants could threaten the reliability and resiliency of the electric grid."[9] Winter 2013-2014 was characterized by numerous periods of colder than average weather beginning in December 2013 and extending into February 2014. The winter included five major cold snaps that extended across much of the United States.

While the "2014 Polar Vortex" presented extreme weather conditions in New York, the NYISO effectively managed reliability throughout this event and has taken many steps to reduce the risks posed by similar events in the future. The NYISO has substantially addressed the concerns that were identified as a result of the Polar Vortex; but the NYISO and its market participants remain vigilant on maintaining reliability and regularly review market mechanisms that will continue to improve on our readiness. The NOPR does not accurately characterize the risks that events like the Polar Vortex events could pose to New York in the future.

On January 7, 2014, the NYISO set a new record winter peak load of 25,738 MW during the Polar Vortex. The NYISO met all reliability criteria and reserves requirements without activating emergency procedures at any time during the winter operating period. It did so despite significant generator capacity derates on some of the coldest days, including generation resources that would appear to qualify under the NOPR as "eligible grid and reliability resources." In the early part of the winter, the NYISO's efforts focused on managing generator capacity derates, some of which resulted from fuel supply or cold weather issues. The NYISO

[9] *See* NOPR at 46,942-43.

also worked with the New York Transmission Owners ("NYTOs") to cancel or reschedule transmission outages. During the latter part of the winter, due to the increased use of oil-fired resources, the NYISO's efforts focused on monitoring potential fuel depletions that could lead to generator capacity derates and working with generators to ensure that their operating status was accurately reflected in the markets.

As discussed in greater detail in the Attachment,[10] the NYISO has implemented various operational and market design changes in response to the Polar Vortex. It has continued to perform seasonal fuel assessments of gas transportation, alternative fuel inventories and predicted replenishment rates each winter since 2013-2014. A new web-based portal allows generators to submit updated fuel information that provides greater situational awareness of generator availability to NYISO operators. The NYISO has also improved generator energy offer reference level management so that NYCA generators may now submit the most up-to-date fuel price or type information when it is needed. The NYISO has enhanced its gas system awareness by incorporating generators' fuel capability information into the visual displays used by control room operators. The NYISO also coordinates with pipelines and local gas distribution companies to better reconcile pipeline outage scheduling with the NYISO's scheduling.

In addition, the NYISO has made improvements to the Energy and Ancillary Service Markets to enhance the quantity of resiliency services that it purchases and the value assigned to them. In November 2015, the NYISO implemented its "Comprehensive Shortage Pricing Enhancements" which augmented its procurement of reserve products to improve system

[10] Attachment, NYISO Response to "Need for Reform - Question 2" and "90-day Requirement - Question 2."

responsiveness to unplanned contingency events.[11] The implementation included new locational reserve requirements, increased procurement targets and escalating price tiers. Improved shortage pricing rules capture the escalating value of regulation, reserves and transmission security under shortage conditions and thus better account for the value of resiliency. Similarly, in July 2016, the NYISO implemented its "Comprehensive Scarcity Pricing Enhancements" which improved price formation protocols to better reflect operations during critical demand response activations.

Finally, many other features have been incorporated into the NYISO's capacity market rules that reflect the importance of resiliency to withstand severe weather events. As discussed in the Attachment,[12] these include basing the downstate Installed Capacity ("ICAP") Demand Curves on an assumption that peaking plant designs will include dual fuel capability. This means that capacity payments in New York already compensate for the costs of having and maintaining dual fuel capability. The ICAP Demand Curves also reflect the costs of hardening infrastructure at New York City generation plants to better withstand major storms. The NYISO is open to exploring through its stakeholder process other ***market-based*** mechanisms that might be needed to more fully reflect the value of resiliency. However, the NOPR's approach would distort, if not destroy, wholesale market signals needed to attract and retain resources required for reliability.

3. New York's Resource Mix and Risk of Losing Additional "Fuel Secure" Generation Differ Substantially from What the NOPR Envisions

[11] *New York Independent System Operator, Inc.*, Proposed Tariff Revisions to Ancillary Service Demand Curves and the Transmission Shortage Cost, Docket No. ER15-1061-000 (February 18, 2015); *New York Independent System Operator, Inc.*, 151 FERC ¶ 61,057 (2015).

[12] *See* Attachment, NYISO Response to "Need for Reform - Question 1."

The NOPR assumes that all ISO/RTO regions with organized energy and capacity markets are heavily dependent on "fuel secure" generation and are equally vulnerable to large scale retirements by such resources. New York, however, has a diverse resource mix with little coal-fired generation. Further, the majority of nuclear plants in New York are already eligible for supplemental compensation. To the extent that additional grid resiliency is needed in New York it appears that investments in transmission and distributed resources would be a more practical and cost-effective way to provide it. In fact, the NYISO Board recently approved a major new public policy transmission project to increase access to hydroelectric resources in western New York that will enhance grid resiliency.[13] The Commission should not take any action in this proceeding that overlooks the real world characteristics of New York's resource mix.

The NYCA's current resource mix is described in more detail in the Attachment.[14] Briefly, more than sixty percent of existing generation capacity in the NYCA burns natural gas or oil with a majority of these resources capable of burning both (*i.e.*, dual fuel units). Nuclear generation contributes approximately fourteen percent of existing generation capacity, while less than three percent of existing generation capacity uses coal as its fuel source. The remaining generation capacity, approximately twenty percent, is hydroelectric generation (run-of-river and pond storage), wind generation, and other renewable generation.

It is important to understand that most nuclear generators in New York are already eligible to receive payments under a state program for their zero-emissions attributes, *i.e.*, Zero-

[13] *See* Press Release, *NYISO Selects NextEra Transmission Project to Increase Access to Hydro Power Addresses Public Policy Transmission Need in Western New York* (October 17, 2017) available at <http://www.nyiso.com/public/webdocs/media_room/press_releases/2017/NYISO-Selects-NextEra-Transmission-Project-to-Increase-Access-to-Hydro-Power.pdf>

[14] *See* Attachment, NYISO Response to "Need for Reform -- Question 4."

Emissions Credit ("ZEC") payments, which supplement energy, capacity, and ancillary services revenues.[15] In 2016, the New York State Public Service Commission ("NYPSC") issued its *Order Adopting a Clean Energy Standard*, in part, to compensate nuclear generators for their environmental attributes.[16] "Upon a determination of facility-specific public necessity, the owner of the zero-emissions generating facility would be offered a multi-year contract . . . to purchase ZECs from the period beginning on the first day of the two-year tranche for which that facility was found eligible, through March 31, 2029."[17] The ZEC payments are designed to prevent premature retirement by compensating nuclear generators for a specific attribute, *i.e.,* zero carbon emissions, to which New York State assigned a value.

Further, it is unclear whether any of the few remaining coal units in New York would qualify for the 90 day on-site fuel requirement. In short, it appears that very little of New York's generation fleet, if any, is contemplated under the NOPR. Nevertheless the NOPR represents an approach that is directly at odds with NYISO's well-functioning market design.

B. The Commission Should Not Adopt the NOPR's Proposed Changes in their Current Form

1. If the Commission Decides to Issue a Final Rule on "Grid Reliability and Resiliency Pricing" it Should Enhance Existing Market Mechanisms to Ensure that they Appropriately Value Resiliency When It Is Needed

[15] Three nuclear generators in the NYCA are eligible to receive ZEC payments; (1) the R.E. Ginna Nuclear Power Plant, (2) the James A. FitzPatrick Nuclear Generating Facility, and (3) the Nine Mile Point 1 and 2 Nuclear Station. The Indian Point Nuclear Generation Facility is not eligible to receive ZEC payments and has agreed to shut down beginning in 2020 pursuant to a contract with the State of New York.

[16] NYPSC Case No. 15-E-0302 - Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, *Order Adopting a Clean Energy Standard* (August 1, 2016).

[17] *Id.* at p. 50.

Since they were established roughly two decades ago, ISO/RTO-administered competitive wholesale electric markets have provided significant benefits to consumers including increased generation efficiency, reduced reserve requirements, fuel cost savings, and improved investment signals. Generation performance and operational improvements have reduced reserve margin requirements, producing savings of $540 million in New York alone since 2000.[18] Since the NYISO's inception, fuel efficiency improvements of the State's generation fleet have exceeded the national average by more than 300%, producing approximately $7 billion in fuel cost savings. Over this same time period, emissions of harmful pollutants from the State's generators have decreased dramatically providing significant air quality improvements. Between 2000 and 2016, SO_2 emissions declined 98%, NOx emissions fell by 87% and CO_2 emissions were reduced by 43%.[19]

Competitive markets have achieved these significant benefits while shifting the risk of generation investments from consumers to independently-owned generating companies and their investors. Competitive markets have also fostered greater grid resiliency by better identifying and valuing it.

There is every reason to expect that the benefits of ISO/RTO-administered wholesale energy markets will continue in the future. However, the existing markets could be severely disrupted if special cost-based compensation mechanisms for favored resource types become widespread. Such subsidies could ultimately jeopardize reliability, skew investment signals, and

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[18] *See, e.g.,* New York Independent System Operator, Inc., *Powering New York - Responsibly*, available at http://www.nyiso.com/public/webdocs/media_room/publications_presentations/Other_Reports/Other_Reports/NYISO_15_Year_Brochure.pdf.

[19] *See* New York Independent System Operator, Inc., *Power Trends: New York's Evolving Electric Grid*, "*From the CEO*"; available at http://www.nyiso.com/public/webdocs/media_room/press_releases/2017/Child_Power_Trends_2017/2017_Power_Trends.pdf.

harm consumers. These risks are acute in New York, notwithstanding its relatively limited amount of in-state coal-fired generation, given the potential that energy from subsidized coal-fired generation in neighboring states might be imported into New York.

The Commission should recognize that existing ISO/RTO market designs already value "resiliency" in various ways and that the best way to ensure that resiliency is appropriately valued is to work ***within*** the ISO/RTO market frameworks, not outside of them. Market rules can be adjusted to accommodate changing public policy priorities, such as those targeted in the NOPR, without making excessive and harmful use of cost-of-service mechanisms.[20]

2. The NYISO Market Design to a Large Extent Values Resiliency by Linking Compensation to Resource Performance in Cost Effective Ways and Can Be Modified to the Extent Necessary to Ensure that Resiliency Is Not Undervalued

The NYISO-administered markets have been designed in a manner that seeks to provide proper financial incentives and price signals to assure the continued reliable operation of the electric system in New York.[21] The NYISO's existing market design values resilience as an element of reliability. All resources that satisfy defined performance criteria are eligible to compete to provide reliability services in the NYISO-administered markets - regardless of technology or fuel type. Importantly, resources are paid for the reliability and resilience services that they provide based on competitive market outcomes.

NYISO market mechanisms, such as the ICAP Demand Curve and shortage pricing rules, provide compensation not just for the level of service needed to meet minimum reliability

[20] As Commissioner LaFleur reportedly emphasized at a recent conference, market designs have previously been adjusted to compensate resources that provide services but that in each case "the market design started with an attribute, figured out why it was needed and then used the market to price it." *DOE NOPR on Grid Resiliency Lights Firestorm; Eyes Turn to FERC for Response*, Foster Electric Report No. 3168 (October 6. 2017).

[21] *See* Attachment, NYISO Response to "Need for Reform - Question 1."

standards but for incremental contributions that exceed the minimum requirements. However, most of these market structures recognize that the value of procuring additional reliability services progressively diminishes after the reliability standards are satisfied and reduces compensation for additional increments accordingly. The NOPR does not consider the need to prevent customers from paying for redundant resiliency that provides no real reliability benefit. Any rule aimed at properly valuing resiliency should limit resiliency compensation to instances where it is beneficial and cost-effective.

As discussed in the Attachment,[22] the NYISO prefers technology-neutral market-based solutions to meet reliability and resiliency objectives that can be demonstrated to meet a specific need. Suppliers that demonstrate high levels of operating performance and fuel assurance should be eligible to receive higher market-based revenues. If the Commission determines that the existing NYISO markets are not fully valuing resiliency benefits, the Commission should recognize that it is necessary to define a specific reliability need and the minimum amount of qualified capacity necessary to meet it. The NYISO should then be permitted to develop market rules to select among all eligible resources to meet the need, without over-procuring (or overpaying). The NYISO is confident that if the behaviors or characteristics that provide enhanced resiliency can be clearly articulated, the markets can be harnessed to achieve the desired benefits at the lowest costs to consumers. Such rules would be more efficient and cost-effective than the cost-based compensation arrangements envisioned by the proposed rule.

[22] *See* Attachment, NYISO Responses to "General Eligibility - Question 4" and "Other - Question 3."

In the alternative, if the Commission requires ISOs/RTOs to adopt cost-based compensation mechanisms, they should be as limited in scope and duration as possible.[23] This is consistent with the Commission's prior findings that ISO/RTO administered competitive markets should utilize out-of-market solutions, such as cost-of-service based compensation mechanisms, only as a measure of last resort for meeting immediate reliability needs.[24] The Commission has emphasized that use of such mechanisms when absolutely necessary to maintain short-term reliability must be of limited duration to avoid undermining price formation in the competitive markets.[25]

Introducing cost-of-service rates for certain generation resources without demonstrating a specific need for particular services from those resources is contrary to the basic principles that have made markets successful and may have adverse effects on reliability. Doing so would effectively insulate certain generation resources from temporal and location-based wholesale market price signals and remove the incentives for resources to maintain and efficiently operate their facilities. Reductions in energy and capacity prices resulting from making resources indifferent to price signals could place additional financial strain on other existing generation resources. Such financial strain could inadvertently accelerate the retirement or mothballing of

[23] *See* Attachment at n. 9, for a description of the NYISO's "minimum oil burn" rules which are an example of a carefully-tailored, appropriately narrow-in-scope cost-based compensation regime for resiliency services that complements the NYISO's markets.

[24] *See*, *e.g.*, *New York Independent System Operator, Inc.*, 150 FERC ¶ 61,116 at P 16 (2015) (directing tariff provisions to providing for the rates, terms and conditions to retain generation resources seeking to deactivate that are needed for transmission system reliability as "a last resort option for meeting immediate reliability needs"); *California Independent System Operator Corporation*, 134 FERC ¶ 61,211, at P 130 (2011) (directing tariff provisions providing that risk of retirement designation may be exercised "only if all other available procurement measures fail to procure the resources needed for reliable operation").

[25] *See*, *e.g.*, *New York Independent System Operator, Inc.*, 150 FERC ¶ 61,116 at P 2 (2015); *PJM Interconnection, L.L.C*, 107 FERC ¶ 16,112 at P 20-21 (2004); *Midwest Independent Transmission System Operator, Inc.*, 108 FERC ¶ 61,163 at P 368 (2004).

other generation facilities, or stall the development of new more efficient generation, that is not eligible for cost-of-service rates under the NOPR.

Cost-of-service compensation for certain resources will also impede the market's ability to procure the most efficient resources that minimize costs to consumers. Such compensation unnecessarily transfers the risk that certain resources may not be economically viable from private investors and developers to those that are unable to manage and mitigate such risk - consumers. Significantly, the NOPR does not address the reliability concerns that arise when resources are insulated from the financial consequences of their operation or explain how the broad use of cost-based compensation mechanisms could be reconciled with the organized markets.[26]

C. To the Extent that the Commission Adopts a Final Rule it Should Direct ISOs/RTOs to Make Compliance Filings that Address "Grid Reliability and Resiliency" Pricing in a Manner that Is Appropriate for their Markets and Regions

1. If the Commission Decides to Issue a Final Rule it Should Permit ISOs/RTOs to Take the Lead in Developing Effective Solutions for their Individual Regions

For the reasons set forth above, if the Commission decides to address "Grid Reliability and Resiliency Pricing" issues in this docket it should not adopt the approach proposed by the NOPR. If the Commission determines that the New York markets are not fully valuing resiliency benefits, it should direct the NYISO to work with its stakeholders to define the appropriate attribute to address a specific need, value that attribute, and determine the minimum amount of qualified capacity necessary to meet it. The NYISO should then be permitted to develop market rules to select among all eligible resources to meet the need in the most economically efficient manner.

[26] *See* Attachment, NYISO Responses to "Other - Questions 1 and 2."

Similarly other affected ISOs/RTOs should have an opportunity to evaluate whether their existing market designs already sufficiently address grid resiliency concerns in their region. If further grid resiliency needs are identified, then that ISO/RTO should work with its stakeholders to develop revised market rules to procure and compensate resiliency resources to the extent that they are needed. Each region should be permitted to define what resiliency services should be priced given its system conditions and market design.

Different ISO/RTO regions have different resource mixes and face different retirement scenarios. This may necessitate their having different resiliency products. The ISOs/RTOs and their stakeholders are best situated to evaluate grid reliability and determine whether and what resiliency products may be warranted for their regions. For instance, a 90-day on-site fuel inventory, if justifiable at all, may not be the appropriate standard for every region. The appropriate on-site fuel inventory may vary depending on the average fuel storage space available to the existing fleet of generation resources. There are few resources that could satisfy the 90-day on-site fuel inventory requirement in the NYCA yet substantial resiliency exists through other means. The "essential energy and ancillary reliability services" could also vary by ISO/RTO region or even within a region. For example, the need for operating reserves in an area may outweigh the need for regulation service in that location. Any compensation for "essential energy and ancillary reliability services" services should be set by the ISO/RTO-administered markets to provide accurate regional price signals to investors.

The Commission should not attempt to impose uniform implementation on all RTOs/ISOs. Each ISO/RTO employs different pricing methods, has different market rules, relies on a different mix of resources and uses different software to implement its markets. The Commission has recognized that ISOs/RTOs do not and need not have identical rules or software

for their markets to produce compatible results.[27] The Commission has also recognized that the practical ability of each ISO/RTO to implement software changes, including the potential costs, often justifies allowing ISOs/RTOs to comply with Commission mandates in ways that accommodate regional differences rather than insisting on "one-size fits all" solutions.[28] It will be necessary to take the same approach in this proceeding and attempting to do otherwise would not constitute "reasoned decision-making."

2. If the Commission Decides to Issue a Final Rule It Should Allow ISOs/RTOs a Reasonable Time to Develop Compliance Filings and to Implement Compliance Tariff Revisions

The Proposal would require ISOs/RTOs to submit compliance filings within 15 days after the effective date of any Final Rule and that the tariff changes take effect 15 days after the compliance filings are due. These deadlines are simply not realistic and attempting to impose them would not be reasoned decision-making. The NYISO requests that if the Commission adopts a final rule in this proceeding it extend the compliance deadline and provide flexibility to each ISO/RTO to review, develop and implement (if necessary) the objectives discussed in the NOPR.

ISOs/RTOs will need time to analyze whether new market products are needed to protect electric system reliability. The NYISO has not identified a new market product that needs to be introduced and individually compensated in the immediate future. But if the creation of new market products is mandated by the Commission, the NYISO will need time to work with its

[27] *See, e.g., New York Independent System Operator, Inc*., 142 FERC ¶ 61,202 at PP 24-26 (2013) ("NYISO's compliance obligation does not require NYISO to redesign its market. [footnote omitted] This would be particularly unnecessary here where, as NYISO points out, it would be costly and economically inefficient to do so.").

[28] *Id*. *See also, New York Independent System Operator, Inc.*, 133 FERC ¶ 61,246 at P 25 (2010).

stakeholders to develop appropriate market rules. Significant additional time will be required to code, test, and implement the software changes necessary to achieve compliance.

As discussed in the Attachment,[29] if the Commission were to issue a final rule that directed the NYISO to provide cost-based compensation to eligible fuel-secure resources the NYISO would expect to devote resources and time comparable to what has been needed to implement its generator deactivation process. Specifically, even working as expeditiously as practicable, the NYISO would need approximately six months to develop necessary market rule changes and eighteen months to develop and implement software from the date that the NYISO's market rule changes were accepted.

Accordingly, the NYISO requests that the Commission provide ISOs/RTOs at least 180 days from the effective date of the issuance of any Final Rule in this proceeding to submit their compliance filings. ISOs/RTOs will need this time to evaluate the concepts addressed in this proceeding and to propose region-specific timelines in the event that market rule and software changes are necessary. The NYISO also requests that the Commission allow each ISO/RTO to request an effective date (or a series of staged effective dates) for any compliance tariff revisions in accordance with its software development schedule. As discussed above, there is no imminent risk that would necessitate a faster timetable in New York.

III. CONCLUSION

WHEREFORE, for the foregoing reasons, the NYISO respectfully requests that the Commission not adopt a final rule in the form proposed by the Secretary; however, if the Commission concludes that action to address "Grid Reliability and Resiliency Pricing" is needed, the NYISO requests that the Commission direct ISOs/RTOs to submit compliance

[29] *See* Attachment, NYISO Response to "Other -- Question 1."

filings only after a reasonable time to ensure that resiliency benefits are properly valued in their markets in the manner best-suited to their respective regions.

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Respectfully submitted,

/s/ *Karen G. Gach*

Robert E. Fernandez
General Counsel
Karen G. Gach
Deputy General Counsel
Alex M. Schnell
Assistant General Counsel/
Registered Corporate Counsel
New York Independent System Operator, Inc.
10 Krey Blvd.
Rensselaer, New York 12144

ATTACHMENT

The NYISO's Responses to
Commission Staff's October 4, 2017 Information Request

Need for Reform

1. What is resilience, how is it measured, and how is it different from reliability? What levels of resilience and reliability are appropriate? How are reliability and resilience valued, or not valued, inside RTOs/ISOs? Do RTO/ISO energy and/or capacity markets properly value reliability and resilience? What resources can address reliability and resilience, and in what ways?

As it relates to the electric system, the concepts of reliability and resiliency are highly interrelated and often synonymous. The operation of the system to maintain reliability has embedded within it many considerations of resilience.

Resilience refers to "the ability to reduce the magnitude and/or duration of disruptive events."[1] Resiliency generally encapsulates four concepts: (i) *robustness*, which refers to the ability of infrastructure to absorb disturbances and continue operating; (ii) *resourcefulness*, referring the capability to successfully manage disturbances; (iii) *rapid recovery*, which relates to the ability to re-establish any lost service as quickly as possible; and (iv) *adaptability*, referring the ability to incorporate lessons learned from past events to improve future system functionality and the ability to weather disruptive events.[2] Reliability is generally defined in terms of two foundational characteristics: (i) *resource adequacy*, which refers to the ability of the electric system to continuously supply the aggregate electricity demand and energy requirements of customers taking into account both scheduled and reasonably expected unscheduled outages of system components; and (ii) *transmission security*, referring to the ability of the electric system to withstand sudden disturbances, such as the unanticipated loss of system components, and continue to supply and deliver electricity.[3]

Reliability and resilience are not necessarily separate and distinct concepts in relation to the electric system. Rather, these two concepts are highly intertwined and often indistinguishable. The requirements for reliable operation of the electric system encompass many aspects of resiliency. For example, maintaining reliability includes, among other resilience measures: (i) advance contingency planning by operating the system to meet N-1 contingencies thereby ensuring that the failure of one system component will not disrupt the continued operation of the system; (ii) redundancy and rapid recovery in the form of procuring voltage support, regulation, and reserves to assist with responding to unanticipated disturbances that may arise and mandatory compliance other standards and requirements that mandate expeditious system

[1] National Infrastructure Advisory Council, *Critical Infrastructure Resilience - Final Report and Recommendations* at 8 (September 8, 2009), available at: https://www.dhs.gov/sites/default/files/publications/niac-critical-infrastructure-resilience-final-report-09-08-09-508.pdf.

[2] National Infrastructure Advisory Council, *A Framework for Establishing Critical Infrastructure Resilience Goals* at 5 (October 19, 2010), available at: https://www.dhs.gov/sites/default/files/publications/niac-framework-establishing-resilience-goals-final-report-10-19-10-508.pdf.

[3] *Id*. at 15.

recovery following major system disturbances; and (iii) emergency preparedness procedures and standards, such as requirements for black start capability, coordination of system restoration and operations during geomagnetic disturbances. As has been aptly observed, the risk management practices and rapid recovery procedures encompassed by continuously maintaining the reliability of the electric system "are so ingrained in the operations and culture of the [electric] industry that many within the industry do not label them as resilience, and many outside the industry are unaware of the extensive resources expended to minimize all-hazard risks."[4]

The appropriate levels of reliability are clearly defined in the reliability standards and operating and system planning requirements imposed upon the NYISO by the Federal Energy Regulatory Commission ("FERC" or the "Commission"), North American Electric Reliability Corporation ("NERC"), the Northeast Power Coordinating Council, Inc. ("NPCC") and the New York State Reliability Council, L.L.C. ("NYSRC"). Together, these entities define a vast array of requirements that the NYISO must abide by in its operation of, and planning related to, the bulk electric system and administration of the competitive wholesale markets in New York.

The NYISO markets have been designed in a manner that seeks to provide proper financial incentives and price signals to assure the continued reliable operation of the electric system in New York. Therefore, the NYISO markets inherently value and support elements of resilience that are embedded in maintaining reliability.

The NYISO administers both day-ahead and real-time markets to procure the necessary Energy and Ancillary Services to reliably operate the system and continuously meet the electricity demands of customers, while simultaneously respecting the capability of transmission facilities to accommodate the delivery of such power, at the lowest overall production cost based on the offers submitted by resources competing to provide service.[5]

The NYISO's Day-Ahead and Real-Time Markets perform a simultaneous co-optimized commitment/dispatch of resources to provide the necessary levels of energy, regulation and operating reserves to address all system needs and maintain reliability. The markets generally secure the transmission system to address single contingency events (*i.e.*, N-1 contingencies).[6] The markets also secure for certain multiple contingency events (*i.e.*, N-1-1 contingencies) to comply with reliability requirements imposed by the NYSRC, as well as operating reserve constraints, which include requirements to meet N-1-1 contingencies and to restore the system to normal operating conditions following a contingency.[7] The clearing prices determined by the

[4] *Id*. at 6.

[5] Voltage control and black start service capability are cost-based Ancillary Services that are not procured through competitive markets administered by the NYISO.

[6] Notably, a subset of these single contingency events involve the simultaneous outage of multiple elements. Examples include: (i) the failure of a circuit breaker due to a fault-to-ground may be cleared by the operation of multiple circuit breakers, resulting in the outage of multiple system components; and (ii) the simultaneous phase-to-ground fault of two adjacent transmission circuits on a multiple circuit transmission tower.

[7] For example, the operating reserve constraints modeled in both the Day-Ahead and Real-Time Markets include: (i) 1,300 MW of 30-minute reserves being procured in the Southeastern New York reserve region in order to prepare

Day-Ahead and Real-Time Markets for Energy, Regulation Service and Operating Reserves reflect the costs of securing the system to meet these contingency events and procure the necessary level of services to meet reliability requirements for which they are designed.

The Day-Ahead and Real-Time Markets administered by the NYISO also use "shortage" pricing to reflect appropriate values for services when insufficient resource capability is available to provide all needed services. Shortage pricing is implemented by various demand curves that represent the escalating value of regulation, reserves and transmission security as the level of insufficient resource capability to provide each such service increases. Escalating prices under shortage conditions provides proper price signals regarding the value of these reliability and resiliency services and ensures that resources capable of providing these services are appropriately compensated for the service provided in response to actual system conditions. Shortage pricing also provides appropriate incentives for resources committed day-ahead to make appropriate arrangements and take necessary actions, including ensuring fuel supply availability, to meet their commitments in real-time in order to avoid the potential of having to buy-out of their obligations at high shortage pricing levels in real-time during periods of system stress.

Complementing the Energy and Ancillary Services markets, the NYISO also administers a capacity market. The capacity market assists with maintaining reliability on a longer-term horizon by ensuring that sufficient resource capability is available to meet peak customer demands, plus a reserve margin to address potential contingencies and other unanticipated events that may result in the need for additional resource capability to adequately serve system needs.

The capacity market provides price signals indicating the value of resource capability in various locations throughout the State. This is accomplished, in part, through the use of a sloped capacity demand curve (*i.e.*, the ICAP Demand Curve) in the ICAP Spot Market Auction. The foundational basis for pricing underlying the ICAP Demand Curves is the projected net cost to build a new peaking facility in various locations throughout the State where resources need to be located to adequately serve system needs.[8] The ICAP Demand Curves are designed to properly value capacity in relation to the applicable minimum requirements needed to ensure reliability (*i.e.*, forecasted peak demands, plus a reserve margin or a minimum amount required to be located within a certain geographic area due to transmission constraints that limit the capability to flow power throughout the State). The ICAP Demand Curves inherently provide for valuation of resilience by continuing to value certain levels of capacity in excess of the minimum amounts required.

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the system to withstand the next worse contingency following the worst contingency for the UPNY-SENY interface; (ii) a 10-minute reserve requirement of 1,200 MW for the East of Central-East reserve region to rapidly restore flows on the Central East interface to within the applicable Interconnection Reliability Operating Limits ("IROL") following the worst contingency and prepare the system to withstand the next worst contingency; and (iii) a 2,620 MW 30-minute reserve requirement applicable for the statewide (*i.e.*, New York Control Area or NYCA) reserve region to prepare the system to withstand the two worst supply contingencies without the need to interrupt deliver of energy to serve load.

[8] A peaking unit is defined as the "the unit with technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable." A peaking plant may consist of one or more units.

In addition to providing an overall construct that values resilience in terms of paying for certain levels of resource capacity beyond the applicable minimum levels required, the estimated cost of constructing a new peaking plant that underlies certain ICAP Demand Curves provides for additional valuation of resilience. For the downstate population centers of New York (i.e., the G-J Locality, New York City and Long Island), the projected costs include various components related to improved resilience, such as dual fuel capability and, in the case of New York City, certain infrastructure hardening costs.

The peaking plant designs underlying the ICAP Demand Curves for each of these downstate areas include dual fuel capability which can result in improved generator fuel assurance and availability. This includes both the cost of the necessary infrastructure to store alternative fuel onsite and the cost of obtaining an adequate reserve of such back-up fuel. The cost estimates currently provide for a fuel reserve that is sufficient to accommodate operation on an alternative fuel for 96 hours of operation before needing to be replenished. For New York City, the estimated costs also include additional storm hardening expenses related to raising the site elevation of plants to meet local zoning requirements enacted in response to flooding that occurred as a result of superstorm Sandy. Including these costs as part of the basis for capacity market pricing in the downstate load centers provides the necessary price signals for investment in new generation facilities located in these areas to include such resiliency improving measures.

All resources (without regard to fuel type) that have demonstrated the ability to meet the performance criteria associated with providing a service that the NYISO procures through its markets are eligible to participate in the relevant market(s), and to compete with other resources to provide the desired service. Resources are paid for the reliability and resilience service that they are scheduled to provide based on the outcomes determined by the competitive markets.

In addition to the competitive wholesale markets it administers, the NYISO also conducts extensive system planning to ensure the reliability of the system into the future. The NYISO's Comprehensive System Planning Process includes reliability, economic and public policy planning procedures. The reliability planning process is conducted biennially to identify any risks to resource adequacy or transmission security over a forward looking ten-year planning horizon. To the extent that a reliability need is identified, the NYISO solicits solutions to resolve any such need, and considers all resource types (*i.e.*, transmission, generation and demand response/energy efficiency) on an equivalent basis as it relates to the ability of any proposal to resolve an identified need. The reliability planning process strives to achieve market-based solutions whenever possible, rather than relying on regulated solutions to resolve any identified reliability needs. If market-based solutions are insufficient, the NYISO conducts a comparative analysis to identify and select the most cost-effective or efficient regulated transmission solution to resolve the reliability need. The public policy planning process is intended to identify potential transmission needs that may be driven by public policy requirements. In certain instances state and federal policies may desire specific outcomes that are not otherwise served by the NYISO's other long-term planning procedures and market operations. This could, for example, include the provision of incremental resiliency above and beyond that necessary to achieve the minimum level of reliability mandated by applicable requirements or additional infrastructure to improve energy delivery capability in support of investments in new supply

resources and/or changes in the resource mix that may result from the implementation and pursuit of certain public policy objectives.

To the extent the concepts reliability and resilience are not already interwoven, resiliency could be best understood as a means of providing incremental reliability above and beyond that required to maintain minimum reliable operation of the system. This could include measures that seek to provide even greater levels of adequacy and security beyond normal operating and planning criteria, such as measures designed to withstand extreme contingency events. The necessity or reasonableness of implementing such incremental measures should be properly assessed in terms of cost effectiveness and expected future grid needs. In other words, the propriety of implementing measures to provide even greater levels of reliability than those currently provided for in the operation and planning of the electric system should be carefully examined in consideration of the benefits and costs related to such measures, both as determined in light of the market design and construct, and the evolving system configuration and structure within which they are intended to be deployed.

2. The proposed rule references the events of the 2014 Polar Vortex, citing the event as an example of the need for the proposed reform. Do commenters agree? Were the changes both operationally and to the RTO/ISO markets in response to these events effective in addressing issues identified during the 2014 Polar Vortex?

The NYISO prefers to address enhancements to resilience, including power supplier availability and performance, through enhanced operational capabilities and targeted improvements to its market rules. The NYISO implemented operational and market changes in response to the 2014 Polar Vortex. The operational changes include new fuel monitoring capabilities for the generation fleet and improvement of gas-electric coordination and communication with natural gas pipelines and Local Distribution Companies ("LDCs"). In November 2015, the NYISO implemented the Comprehensive Shortage Pricing project that included energy market changes to increase the New York Control Area 30-minute operating reserve requirements and implement more extreme operating reserve shortage pricing in order to better align the market signals with reliability needs. In addition, the NYISO implemented an improved ability to reflect day-ahead and intra-day supplier fuel costs in Generator offers. The changes NYISO has implemented since the 2014 Polar Vortex support improved supplier performance and resilience.

The NYISO continues to evaluate the need for additional market rule changes to further improve supplier performance and to enhance resilience. As New York's power system evolves it is necessary to continually assess how to best maintain reliability and enhance resilience in a cost effective manner.

3. The proposed rule also references the impacts of other extreme weather events, specifically hurricanes Irma, Harvey, Maria, and superstorm Sandy. Do commenters agree with the proposed rule's characterization of these events? For extreme events like hurricanes, earthquakes, terrorist attacks, or geomagnetic disturbances, what impact would the proposed rule have on the time required for system restoration, particularly if there is associated severe damage to the transmission or distribution system?

To the extent that the proposed rule references on-site storage of fuel supply that increases the access to and availability of resources, the NYISO believes that on-site fuel storage would enhance a power supplier's ability to provide essential reliability services, including restoration capabilities, for some of the extreme events identified in the Commission's question. On-site storage may help limit the need to deliver fuel via a transportation network that may be compromised by an extreme event. However, the types of service disruption experienced during extreme weather events, such as superstorm Sandy in New York, are varied. The NYISO's first-hand experience with extreme weather events does not demonstrate that the proposed on-site fuel storage requirements will address, in a cost-effective manner, the resiliency concerns raised in the NOPR. For example, flooding during extreme weather events can compromise equipment at generation facilities. The transmission system and distribution networks that are necessary to transmit power from generators to loads can be impacted by extreme events. Flooding of generating units, and damage to the transmission system are two examples of service disruptions that New York utilities experienced during superstorm Sandy that are not solved by on-site fuel storage.

4. The proposed rule references the retirement of coal and nuclear resources and a concern from Congress about the potential further loss of valuable generation resources as a basis for action. What impact has the retirement of these resources had on reliability and resilience in RTOs/ISOs to date? What impact on reliability and resilience in RTOs/ISOs can be anticipated under current market constructs?

The NYISO Capacity Market is designed to ensure that sufficient resources are available to address expected system requirements, including a measured capacity surplus to address uncertainty in resource and transmission availability. The NYISO Energy Markets procure sufficient energy to meet load requirements and sufficient operating reserves to respond to contingencies. The NYISO has managed the retirement of supply resources through its generator deactivation process, which includes reliability planning and market protocols to address any impacts retirements are expected to have on reliability and resilience.

A number of coal resources have already retired in New York. In a few cases, local transmission reliability needs associated with those deactivations were identified. To address the identified reliability needs, short-term reliability must-run contracts were entered into with the deactivating resource while transmission upgrades were constructed to permit the retirements. A relatively small percentage of coal resources remain available as part of the New York Control Area

("NYCA") generating capability; 3% in terms of the 2017 NYCA Summer Capability and 1% of the 2016 NYCA Energy Production. The majority of the nuclear generating fleet in the NYCA is eligible for the New York State Zero Emissions Credit ("ZEC") program which helps supplement these Generators' ongoing financial viability. Nuclear resources accounted for 14% of the 2017 NYCA Summer Capability and provided 30% of the 2016 NYCA Energy Production.

5. Is fuel diversity within a region or market itself important for resilience? If so, has the changing resource mix had a measurable impact on fuel diversity, or on resilience and reliability?

Fuel diversity, in and of itself, does not ensure reliability or resilience. The value of fuel diversity is that there is a lower likelihood that a single issue (sometimes referred in the industry as a "common mode failure") would compromise a significant portion of the power supply. For example, if the only type of fuel on the supply side is natural gas then, holding all else constant, an interruption in the availability or deliverability of natural gas to generators could have a significant impact on the electric grid.[9] Power supplier performance and fuel assurance are more significant reliability criteria than fuel diversity. Power supplier performance incorporates all criteria that impact whether, when the NYISO schedules a generator, that generator can be counted on to operate to meet the schedule it received. For example, a generator with a 90-day on-site supply of coal that cannot reliably start-up when it is scheduled to start would have poor power supplier performance. The availability of such a poorly performing resource would do little to improve system reliability or resilience. Regarding fuel assurance, there are numerous means to ensure a dependable fuel supply. In New York, many gas-fired generating units that have interruptible gas pipeline service also have dual fuel capability and on-site storage of the alternate fuel, which promotes reliability and resilience.

Although fuel diversity and maintaining an on-site fuel supply mitigates certain types of reliability risks, neither characteristic provides a guarantee of reliability or resilience and resources with these characteristics are unlikely to be the lowest costs alternative to achieving reliability and resiliency across a range of possible contingencies. A more cost effective approach to ensuring the power grid satisfies reliability and resilience criteria would be to offer

[9] The New York State Reliability Council ("NYSRC") has implemented "minimum oil burn" local reliability rules in New York City and on Long Island to address the risk that a natural gas fuel supply interruptions might harm electric reliability. The minimum oil burn rules are designed to provide an essential reliability service in a manner that does not undermine the operation of the NYISO's markets. The rules require that, under specified load conditions, designated New York City and Long Island generators burn an alternate, on-site fuel (usually oil) instead of natural gas, and that other specifically designated online generators be capable of automatically switching from burning natural gas to consuming their alternate, on-site fuel without shutting down. *See NYSRC Reliability Rules & Compliance Manual*, Local Reliability Rules G.2 and G.3 ("[T]he NYS Bulk Power System shall be operated so that the loss of a single gas facility does not result in the loss of electric load within the New York City or Long Island zones"). Section 4.1.9 of the NYISO's Market Administration and Control Area Services Tariff allows generators that comply with minimum oil burn directives to recover costs associated with burning the alternate fuel instead of natural gas. This compensation mechanism provides generators with cost recovery in exchange for providing a resiliency service, but only when the service is truly needed.

financial incentives to achieve desired power supplier performance criteria, and to rely on the competitive market to provide resources that satisfy the criteria at least cost. On-site fuel storage may be critical to power supplier performance in some locations. In other locations, 90 days of on-site fuel storage might not appreciably improve the reliability or resilience of the power system, even though achieving that criterion would significantly impact the cost of electricity for customers. Implementing the one-size-fits-all approach set forth in the proposed rule (which proposes to pay a significant premium to obtain 90 days of on-site fuel storage) is not guaranteed to improve the reliability or resilience of the power system. The proposed rule would, more likely, increase costs and fall short of achieving the reliability objectives that a better targeted proposal might achieve.

Eligibility

General Eligibility Questions

1. **In determining eligibility for compensation under the proposed rule, should there be a demonstration of a specific need for particular services? What should be the appropriate triggering and termination provisions for compensation under the proposed rule?**

The NYISO prefers market based solutions to meet reliability and resiliency objectives that can be demonstrated to meet a specific need. As a prerequisite to implementing the proposed rule, the Commission should first confirm that an identified reliability or resiliency need cannot be adequately satisfied through market-based mechanisms. Developing a rule that (a) requires a demonstrated need to be identified, (b) defines the service that is necessary to meet the need, and (c) allows market-based solutions to be presented to address the need, will help ensure that consumers will receive the necessary services at the lowest cost. In the absence of a demonstrated, defined reliability need, it is unclear how to ensure that load is paying a just and reasonable rate for the service(s) the proposed rule would require the NYISO to procure.

With regard to eligibility under the proposed rule, the triggering provisions should require the demonstration of a reliability need for specific service(s), identify the quantity of each service that needs to be procured to protect reliability, and should require a determination that each selected resource will address the identified reliability need. The reliability assessment should evaluate the particulars of the need including, for example, determining the number of days of on-site fuel storage that are necessary to address the identified reliability need. Compensation should be aligned with addressing the reliability need at least cost. Termination of compensation should occur if the resource fails to satisfy the terms of the agreement, when market-based mechanisms are developed to address the need, or if the grid evolves in a manner that eliminates the need.

2. **As the proposed rule focuses on preventing premature retirements, should a final rule be limited to existing units or should new resources also be eligible for cost-recovery? Should it also include repowering of previously retired units? Alternatively, should there be a minimum number of MW or a maximum number of MW for resources receiving cost-of service payments for resilience services? If so, how should RTOs/ISOs determine this MW amount? Should this also include locational and seasonal requirements for eligible resources?**

The NYISO prefers market based solutions to meet reliability criteria and/or resiliency objectives that can be demonstrated to meet a specific need on either a seasonal or locational basis. The Commission should determine a specific reliability need and criteria for determining the minimum amount of qualified MW necessary to address the need. Market rules should then be developed to select among all eligible resources to satisfy the reliability need.

ISOs and RTOs should not be required to procure more of any product or service than the amount that has been demonstrated to be needed for reliability or resiliency. Requiring ISOs and RTOs to procure more of a product than the identified reliability or resiliency need could impose costs on consumers that exceed the expected benefits.

ISOs and RTOs should be permitted to consider all of the benefits that each resource can provide (including but not limited to benefits that result from the electrical location of the resource) when selecting the appropriate mix of resources to satisfy a reliability need.

3. **Are there other technical characteristics that should be required for an eligible unit besides on-site fuel capability? If so, what are those technical characteristics and what benefits do they provide? What types of resources can meet the proposed eligibility criteria of the proposed rule? What proportion of total current generating capacity does this represent?**

The NYISO prefers market based solutions to meet reliability and resiliency objectives that can be demonstrated to meet a specific need. Power suppliers that can demonstrate high levels of operating performance and fuel assurance should be eligible to receive higher market based revenues.

In addition to the ability to store a large supply of fuel on-site, the Commission should consider what level of storm hardening and responsiveness to changing system conditions the unit should possess to be considered providing resiliency service and to be eligible for compensation. If resiliency includes the expectation to be responsive to changing system conditions, then eligible resources should be capable of starting up quickly and adjusting its output levels on demand. The NYISO's markets currently provide incentives to suppliers to ensure their resource is available and ready to perform. Because a resource's failure to be available when needed or to perform when called upon can have adverse reliability impacts, the NYISO's market rules are designed to incent availability and responsiveness through market compensation and to impose penalties when suppliers fail to meet their obligations. The NYISO has seen both improved

availability and performance from suppliers since the wholesale electricity markets started in 1999. For example, power suppliers that continuously demonstrate their ability to start on time and follow NYISO instructions are rewarded for their performance through increased energy revenues and capacity sales. In contrast, suppliers that fail to start or follow NYISO instructions can be penalized and ultimately suspended from participating in the sales of various market products. Suppliers are not penalized if they are unable to perform due to electric delivery system issues like transmission outages.

With regard to the Commission's question about the types of NYCA resources that are capable of meeting the eligibility criteria included in the proposed rule, it is not clear to the NYISO that any resources other than existing nuclear units are capable of satisfying the proposed eligible grid reliability and resiliency requirements. Existing nuclear units represent 14% of total NYCA capacity. Remaining coal units currently represent 3% of total NYCA capacity. As explained in the NYISO's response to "Need for Reform - Question 4" above, the majority of the nuclear generating fleet in the NYCA is already eligible for the ZEC program which helps supplement these Generators' ongoing financial viability.

4. If technically capable of sustaining output for a sufficient duration (and meeting other relevant requirements), should resources such as hydroelectric, geothermal, dual-fuel with adequate on-site storage, generating units with firm natural gas contracts, or energy storage (each of which might have a demonstrable store of energy to draw upon to sustain an electrical output, if not necessarily fuel) also be eligible? Why or why not? If technical capability is the appropriate criterion for eligibility, what specific technical capability should be required to be eligible?

The NYISO prefers technology neutral market based solutions to meet reliability and resiliency objectives that can be demonstrated to meet a specific need. If FERC determines that a reliability need exists that requires ISOs and RTOs to retain high capacity factor resources that can operate for months without resupply, then all power suppliers that can demonstrate adequate levels of operating performance and fuel assurance should be eligible to provide the new reliability service.

If the singular objective is sustained, long term output at consistent levels (classic "baseload" operation), it is unclear how energy storage could achieve this performance without recharging its capacity. Further definition of the desired resiliency service in terms of output levels, duration and flexibility would be necessary to identify the specific resource types that can provide the desired service.

5. The proposed rule would require that eligible resources be able to provide essential energy and ancillary reliability services and includes a nonexhaustive list of services. What specific services should a resource be required to provide in order to be eligible?

The NYISO prefers market based solutions to meet reliability and resiliency objectives that can be demonstrated to meet specific energy and ancillary reliability services needs. It is unclear what specific services or operating characteristics the NOPR is attempting to ensure are procured to improve the reliable operation and resiliency of the power system. A resiliency service that is responsive to real-time disruptions and changes on the power system should require resources that are capable of responding quickly to changing system requirements. Energy and ancillary service providers in New York are nominally required to respond to 5-minute dispatch signals, to be capable of ramping the unit up and down to provide ancillary services. Another valuable real-time operations reliability characteristic is the ability of a resource to start quickly in response to unexpected system events.

6. The proposed rule would limit eligibility to resources that are not subject to cost of service rate regulation by any state of local regulatory authority. How should the Commission and/or RTOs/ISOs determine which resources satisfy this eligibility requirement?

ISOs and RTOs are not cost-of-service rate regulators. They are not ordinarily involved in state or local proceedings involving cost-of-service rate regulation within their geographic footprints. They should therefore not be required to determine whether resources are subject to cost of service rate regulation.

Regardless of the entity that is made responsible for verifying eligibility, the owners of resources seeking compensation under any final rule adopted in this proceeding should be required to certify and acknowledge their resource's eligibility. If the owner of a resource were to make a false or misleading statement to the Commission (or to an ISO or RTO) it would be subject to enforcement action under Section 35.41(b) of the Commission's regulations. Implementing a certification and acknowledgement requirement would strongly discourage ineligible resources from inappropriately seeking compensation. The proposed requirement would also reduce the administrative burden imposed on the entity responsible for verifying eligibility. That entity would only need to confirm that a certification and acknowledgement had been completed and executed, and that the facts stated in the certification and acknowledgement, if true, are sufficient to demonstrate eligibility. If it were subsequently determined that the resource had made false or misleading statements then the matter could be referred to the Commission's Office of Enforcement.

Section 23.4.5.7.9.2 of the NYISO's Market Administration and Control Area Services Tariff imposes a certification and acknowledgement requirement on resources seeking a "Competitive Entry Exemption" from the application of "buyer-side" capacity market power mitigation rules. It could serve as a model. The Commission would need to carefully consider the language to be included in a certification and acknowledgement form, particularly to the definition of "state

cost-of-service rate regulation" to ensure that the requirements was neither over- nor under-inclusive. ISOs and RTOs should not be responsible for determining the necessary scope of the certification.

90-day Requirement

1. **The proposed rule defines eligible resources as having a 90-day fuel supply. How should the quantity of a given resource's 90 days of fuel be determined? For example, should each resource be required to have sufficient fuel for 24 hours/day and sustained output at its upper operating limit for the entire 90-day period? Would there be any need for regional differences in this requirement?**

The NYISO prefers market based solutions to meet reliability and resiliency objectives that can be demonstrated to meet a specific need. If a resource demonstrates that it can provide a necessary reliability benefit at least cost, then NYISO would propose to develop market compensation for providing the reliability and resilience product. Power suppliers that can demonstrate high levels of daily operating performance and fuel assurance might become eligible to receive additional market-based revenues. Should the Commission enact a 90-day on-site fuel storage requirement, the NYISO supports consideration of regional differences in determining how to apply such a requirement.

Where multiple resources that are under common ownership share on-site fuel storage, imposing the proposed 90-day requirement could incentivize some Generators at a location to be retired so that the remaining Generator(s) have sufficient fuel on-site to qualify as eligible grid reliability and resiliency resources ("EGRs"). Such a result would not be expected to enhance system reliability.

2. **Is there a direct correlation between the quantity of on-site fuel and a given level of resilience or reliability? Please provide any pertinent analyses or studies. If there is such a correlation, is 90 days of on-site fuel necessary and sufficient to address outages and adverse events? Or is some other duration more appropriate?**

Some level of on-site fuel storage may be correlated to a power supplier's ability to provide essential reliability services, including restoration capabilities, for some extreme events. Evidence that the NYISO has reviewed indicates that an on-site fuel supply of less than 90 days may be more cost effective in meeting resiliency objectives than mandating a 90-day minimum.

Gas system constraints resulting in Operational Flow Orders that restrict Generators' non-firm gas use rarely last longer than two or three days based on a review of historical events. The Polar Vortex of 2014 had a three day duration (January 6-8, 2014), however it is possible that a longer duration event could occur in the future. The NYISO's ICAP Demand Curves for the

Hudson Valley, New York City and Long Island include the costs of onsite alternative fuel (Ultra Low Sulfur Diesel or "ULSD") needed to support 96 hours of operation for a proxy peaking unit. The adequacy of this level of alternative fuel was supported by an analysis of the expected operations of a proxy peaking unit over a historical three year period that included the Polar Vortex of 2014. The NYISO's assessment determined that the minimum number of days to burn through the entire 96 hours of ULSD was 7 days for New York City, 19 days for Long Island and 55 days for the Hudson Valley. These results indicate that the onsite storage assumed for dual fuel peaking plants is adequate. These results also demonstrate that conditions (including any replenishment delays) that could result in ULSD being unavailable for energy production are not anticipated to occur.[10]

During superstorm Sandy both Nine Mile Point Unit 1 and Indian Point Unit 3 were unavailable due to the loss of the transmission exits to the plants. Neither plant suffered storm damage and both of the affected Units had adequate fuel available. The availability of on-site fuel storage did not enhance the named Generators' performance during superstorm Sandy.

Fuel Supply Requirement

1. **The proposed rule requires that resources must be in compliance with all applicable environmental regulations. How should environmental regulations be considered when determining eligibility? For example, if a unit that was capable of keeping 90-days of fuel on-site was subject to emission limits that would prevent it from running at its upper operating limit for 90 days, should that unit be eligible under this proposed rule?**

If the Commission orders the NYISO to implement a cost-of-service rate structure for EGRs, the NYISO believes that the eligibility requirements should recognize applicable environmental regulations that might restrict a Generator's operation. Further definition of the resiliency product that is being sought under the proposed rule is required in order to determine how environment regulations would impact the delivery of the desired service. If a resource is incapable of providing the service requested due to environment regulations then it should be precluded from being an EGR and receiving compensation. A resource with an emission limit that prevents it from running for 90 days, using on-site fuel, is not available for 90 days and should not qualify as an EGR under the proposed rule.

[10] *See* NYISO's November 18, 2016 filing in FERC Docket No. ER17-386 at 32.

2. **As the proposed rule references the need for resilience due to extreme weather events, including hurricanes, should there be any other eligibility criteria for the resource or fuel supply (e.g., storm hardening)? What considerations should be given to the vulnerability of 90-day fuel supplies to natural or man-made disasters such as extreme cold temperatures, icing, flooding conditions, etc. that may impact the on-site fuel supply?**

The resiliency service that the proposed rule seeks to procure needs to be better defined in order for the NYISO to determine the characteristics and performance requirements that should be applied to determine eligibility. If the Commission orders the NYISO to implement a cost-of-service rate structure for suppliers with a 90-day fuel supply, the NYISO believes that eligibility should require a reasonable expectation of resource performance in addition to requiring the resource to meet fuel assurance requirements.

3. **Does the vulnerability or non-availability of on-site fuel supplies vary depending upon fuel type, location, region, or other factors?**

The NYISO would not normally expect that vulnerability or non-availability of on-site fuel supplies would vary materially depending upon fuel type, location, region, or other factors unknown at this time.

Implementation

1. **How would eligible resources receiving cost of service compensation under the proposed rule be committed and dispatched in the energy market?**

If the Commission orders the NYISO to implement a cost-of-service rate structure for EGRs, the NYISO would require each EGR to offer into the energy market at its cost-based reference level. This proposal is consistent with how the NYISO proposes to require reliability must-run resources to offer energy and ancillary services.[11] Each EGR would be committed and dispatched based on its incremental cost of providing energy and ancillary services. Under the NYISO's Generator Deactivation Process ("RMR") design, any "revenues" an EGR receives in NYISO energy markets that exceed its incremental costs are refunded back to the NYCA loads that are responsible for paying the EGR's full cost-of-service rate. This bidding construct can help defray some of the costs to NYCA loads for maintaining EGRs. In addition, requiring EGRs to offer energy and ancillary services consistent with their demonstrated incremental cost of providing the services will minimize the subsidy that NYCA loads must pay by dispatching EGRs based on their incremental operating costs.

[11] *See* the RMR Generator and Interim Service Provider Energy and Ancillary Service Market Participation Rules that the NYISO proposes to add to Section 23.6 of its Market Services Tariff in its September 19, 2016 compliance filing in FERC Docket No. ER16-120.

2. How would eligible resources receiving cost based compensation under the proposed rule be considered in the clearing and pricing of centralized capacity markets?

Resources receiving full cost-of-service recovery would face zero additional (*i.e*. incremental) cost to participate in the NYISO capacity market. It is likely that EGRs would be required to sell their output into the NYISO's ICAP market as a requirement for receiving a cost-of-service rate. Because the resource's ICAP offer would be required to clear as a prerequisite to receiving the cost-of-service rate, the EGR would be expected or required to participate in the ICAP market as a price-takers (*i.e*. to offer its capacity into the marketplace at a price of $0/kW-mo). Such participation would likely increase the quantity of capacity that clears in the NYISO ICAP market and decrease the market price for that capacity. Because an EGR's actual costs would significantly exceed its $0/kW-mo offer, over the longer-run, EGR participation in the NYISO's ICAP market would be expected to alter price signals and to cause some resources that have lower overall costs than the EGRs to leave the market. This would be expected to increase the overall capacity market cost to consumers in New York.

The NYISO's current ICAP market rules only regulate capacity suppliers' offer prices under a very limited set of circumstances (*e.g*. the NYISO "buyer-side mitigation" rules that apply to specific new entrants proposing to be electrically located within NYISO Load Zones G, H, I, J).

3. What is the expected impact of this proposed rule on entry of new generation, reserve margins, retirement of existing resources, and on resource mix over time?

A well functioning and efficient market provides price signals for investment such that, as new resources come in, they tend to displace resources that are more expensive to maintain and operate on a going-forward basis. Because the proposed rule does not include any cost-based selection criteria, and exempts EGRs from competing against other resources in the ISO/RTO markets, EGRs will be placed at the "bottom" of the supply stack in the capacity market (reducing the ICAP market price that is paid to other resources in the manner NYISO describes in its response to "Implementation - Question 2," above). Thus, EGRs will almost certainly displace other Generators that rely on the wholesale electricity markets for the bulk of their revenues in the long run.

Because the proposed rule protects EGRs from the need to compete with new, more efficient resources to earn market revenues, the NYISO expects that the entry of new, efficient resources will be deferred due to the continued operation of higher cost EGRs that otherwise would have been expected to retire. EGRs will present a new risk to market entry that would be expected to limit new entry and increase the level of compensation required to overcome the additional risk.

4. Should there be performance requirements for resources receiving compensation under the proposed rule? If so, what should the performance requirement be, and how should it be measured, or tested? What should be the consequence of not meeting the performance requirement?

In general, on-going monitoring, performance requirements and incentives/penalties are needed to ensure that EGRs provide a high level of service (as should be expected from resources that are providing a reliability and resiliency product). Specifically, with respect to the proposed rule it is reasonable to assert that non-performance/compliance should directly reduce or eliminate the compensation received with the potential for a penalty adder.

If the Commission determines that EGRs must be paid their full costs plus a rate of return, then it is imperative that rules be developed to reduce the allowed compensation if an EGR fails to respond to operator instructions, fails to maintain its availability, or fails to meet other Commission-specified reliability or resiliency standards. The financial incentives should align the Commission's defined reliability goals with the EGR's desire to maximize returns for its investors and shareholders.

5. Should there be any restrictions on alternating between market-based and cost-based compensation?

Toggling between cost-based and market-based rates should be restricted for EGRs for many of the same reason toggling is prohibited for reliability must-run generators.[12] As the Commission has previously explained, permitting a Generator that elects to be paid a cost-of-service rate to toggle back to receiving market compensation at times when the market rate exceeds the cost-of-service rate would result in unjust and unreasonable compensation to the toggling Generator.

Rates

1. The proposed rule lists compensable costs that should be included in the rate as operating and fuel expenses, costs of capital and debt, and a fair return on equity and investment. Are there other costs that would be appropriate to be included in the rate? Would any of the listed costs be inappropriate for inclusion?

The NYISO is opposed to providing long-term compensation to NYCA resources outside of the markets that the NYISO administers. For the reasons explained in its responses to the Commission's other questions, the NYISO is concerned that compensating EGRs outside the NYISO administered markets could have adverse reliability impacts in New York.

[12] *See, e.g.*, *ISO New England Inc.*, 125 FERC ¶ 61,102, at PP 45-48 (2008).

Most or all of the existing NYCA resources that might satisfy the Commission's proposed EGR requirements were rate based generators that were divested by the New York Transmission Owners ("NYTOs") prior to the commencement of the NYISO-administered markets in 1999. To the extent New York ratepayers have already paid for the EGRs, it would be inappropriate to charge New York ratepayers again for costs that were previously included in ratebase and recovered. Using the purchase price to determine the ratebase on which a rate of return might be recovered for an EGR would be inappropriate because (a) using the purchase price would reward churn (selling the resource to enhance the ratebase that is eligible for a return), and (b) would provide a financial incentive to overpay for an EGR (again, because overpaying would result in a larger ratebase on which a return could then be earned).

2. Should wholesale market revenues offset any cost of service payments stemming from the proposed rule?

If the Commission orders the NYISO to implement a cost-of-service rate structure for EGRs, the NYISO would likely require each EGR to offer available energy and ancillary services into the energy market at the EGR's cost-based reference level, and to offer all available capacity into the ICAP market at $0/kW-month. This proposal is consistent with how the NYISO proposes to require Generators that seek to deactivate, but that remain in service pursuant to a reliability must-run contract, to offer energy and ancillary services. The compensation mechanism reflects the fact that, by paying a full cost-of-service rate, New York loads will have already paid the EGR for its capacity. EGRs would be committed and dispatched in the energy market using their cost-based offers.

Under the NYISO's Generator Deactivation Process design, all capacity payments and any "revenues" the EGR receives in NYISO energy markets that exceed its incremental costs would be credited to the NYCA loads that are responsible for paying the EGR's full cost-of-service rate. This construct can help defray some of the costs to NYCA loads for maintaining EGRs. In addition, requiring EGRs to offer energy and ancillary services consistent with their demonstrated incremental cost of providing the services will minimize the subsidy that NYCA loads must pay by dispatching EGRs based on their incremental operating costs.

3. How should RTOs/ISOs allocate the cost of the proposed rule to market participants?

One method to allocate the cost of the proposed rule would be to consider the value associated with increased resilience is in the greater reliability of the entire NYCA system. As such, the costs associated with this service should be allocated on a NYCA system-wide load ratio share basis, reflecting the collective value of the service provided.

4. How would the requirement that eligible resources receive full cost recovery be reconciled with the requirement, as stated in the regulatory text, that resources be dispatched during grid operations?

As explained in its responses to "Implementation - Question 1" and "Rate - Question 2," the NYISO would propose to commit and dispatch EGRs based on their demonstrated, incremental cost of providing energy and ancillary services. Requiring EGRs to offer energy and ancillary services consistent with their demonstrated incremental cost of providing the services will enable the NYISO to minimize the subsidy that NYCA loads must pay by dispatching EGRs based on their incremental operating costs.

If EGRs are compensated consistent with NYISO's proposed reliability must-run rules, then requiring EGRs to be committed and dispatched at times when their operation would increase the total production cost incurred to meet load (a) would not result in additional revenues to the Generator, but (b) would further decrease the efficiency of the NYISO's market solution and increase the total cost incurred to serve NYCA load.

II. Other

1. The proposed requirement for submitting a compliance filing is 15 days after the effective date of any Final Rule in this proceeding, with the tariff changes to take effect 15 days after the compliance filings are due. Please comment on the proposed timing, both to develop a mechanism for implementing the required changes and to implement those changes, including whether or not such changes could be developed and implemented within that timeframe.

The NYISO's comments address the need for additional time to submit compliance filings, make software changes and implement new market rules. *See* Section II.C.2 of the NYISO's Comments.

The NYISO is currently developing software to implement Generator Deactivation Process tariff provisions based on the Commission's February 19, 2016 order ("Generator Deactivation Order"). The NYISO spent eight months developing the market rules included in its Order compliance filing. The NYISO's implementation of the Generator Deactivation Process market rules filed with the Commission will require approximately twenty months to complete, with an expected software deployment during Fall 2018. The implementation timeline includes the time required to develop functional requirements, write software and to test software performance. Thorough software testing also avoids unexpected conflict with other market and settlement rules. This is a normal timeline to implement complex market and settlement rules without negatively impacting existing market and settlement logic.

If the Commission orders the NYISO to implement a cost-of-service rate structure for EGRs, the NYISO would expect to develop new market rules and software and to build on certain elements of the Generator Deactivation Process rules and software to implement the proposed EGR compensation rules. The NYISO envisions the proposed rule requiring approximately the same level of effort as the Generator Deactivation Process compliance filing and software implementation; however, the exact timing depends heavily on the terms of any Final Rule. The

NYISO estimates requiring six months or more, after the Commission issues any Final Rule, to develop the market rules for its compliance filing and approximately a year-and-a-half to develop and implement software, assuming the Commission accepts the NYISO's initial compliance filing.

Both the proposed requirement for submitting a compliance filing 15 days after the effective date of any Final Rule in this proceeding, and the proposed requirement that tariff changes take effect 15 days after the compliance filing deadline, are unrealistic. More time is needed to prepare market and settlement rules prior to submitting compliance filings and more time is needed to implement the necessary alternative provisions. New market and settlement software cannot be implemented in a 15 day window without jeopardizing the integrity and quality of existing ISO and RTO market and settlement software.

2. Please comment on the proposed rule's estimated burden of $291,042 per respondent RTO/ISO, to develop and implement new market rules as proposed, including the potential software upgrades required to do so.

As discussed in the response to "Other - Question 1," the NYISO expects to develop new market rules and software and to build on certain elements of its Generator Deactivation Process rules and software. Based on a preliminary analysis, the NYISO expects to need, at a minimum, additional or new: (1) audit and validation rules to verify service performance; (2) penalty rules for EGRs that fail to satisfy their obligations; (3) capacity market rules to protect other market participants from the behavior of resources that are not dependent on capacity market payments; (4) operating requirements that are different than the Generator Deactivation Process minimum operating standards; and (5) settlement rules.

The NYISO's Generator Deactivation Process project implementation discussed in the response to "Other - Question 1" is expected to cost in excess of $1.5M. The NYISO spent more than $500,000 to develop new market rules over an eight month period and to prepare its compliance filing. The budget to develop functional requirements prior to software development was approximately $300,000. The software upgrade project is ongoing and costs are expected to exceed $600,000.

The estimated burden to develop and implement new market rules in response to the proposed rule should be increased to at least $1.5M. The NYISO estimates a cost of approximately $300,000 to develop market rules and to prepare its compliance filing. Assuming the Commission accepts NYISO's compliance filing, the NYISO's estimated burden for developing functional requirements and software is approximately $1M. The estimated burden assumes that the Commission does not require significant additional modifications to the NYISO's pending Generator Deactivation Process compliance filing, and that the Commission allows the NYISO to achieve compliance with the proposed rule in a manner that is consistent with NYISO's Generator Deactivation Process. The estimated burden is likely to increase significantly if the NYISO cannot rely on some of its Generator Deactivation Process rules to achieve compliance with the proposed rule.

3. Please describe any alternative approaches that could be taken to accomplish the stated goals of the proposed rule.

Developing a rule that (a) requires a demonstrated reliability and/or resilience need to be identified, (b) defines the service that is necessary to meet the need, and (c) allows technology neutral, market-based solutions to be offered to address the need, would help ensure that consumers receive the necessary services at the lowest cost.

Each ISO or RTO has worked collaboratively with its stakeholders to develop the markets necessary to provide reliability and address resiliency for the unique needs of their respective systems. ISOs and RTOs should be given the opportunity to demonstrate that their existing market designs already sufficiently address grid resiliency concerns in their region. If, however, an ISO or RTO determines that resiliency is an operating characteristic or market product that needs to be addressed further, then that ISO or RTO should work with its stakeholders to develop revised market rules to procure, and compensate for, resiliency benefits in a cost effective manner.

The right approach is likely to vary by region. For example, in New York there are unique reliability rules, including dual fuel requirements in certain locations, such as in New York City, that support grid reliability. The unique energy and capacity market designs in New York integrate reliability criteria to help meet demand at lowest cost. Most recently, the NYISO refined its energy market design to provide price signals better aligned with system reliability needs during shortage situations. In addition, storm hardening steps have been taken throughout the state to improve resiliency. Implementing a one-size-fits-all approach would all but ensure that the selected approach is ***not*** the least cost approach for each affected region.

4. What impact would the proposed rule have on consumers?

Wholesale markets were developed and implemented to satisfy reliability requirements in a leastcost manner. Using markets to allow competition to satisfy system needs permits the identified needs to be addressed efficiently. The proposed rule provides guaranteed cost recovery to a limited set of resources. The proposed rule does not demonstrate that the significant additional costs it will impose are consistent with the benefits that implementing the rule would provide to the New York Control Area.

The proposed rule would likely have both short- and long-term impacts on consumers. In the near term, continued operation of uneconomic EGRs will cause non-EGR resources that would otherwise have been economic to exit the marketplace. In the long term, continued retention of uneconomic EGRs would defer or negate the entry of newer, more efficient and lower cost resources.

Hypothetically speaking, if EGRs are ***truly*** being compensated to meet an as-yet unrecognized and unpriced reliability or resiliency need, then consumers would likely be harmless in the short run. However, employing a cost of service model instead of a market model to procure the new service would likely increase costs to consumers in the long run, by decreasing the likelihood that competitive, lower priced alternatives that are capable of meeting the reliability need will be able to displace the existing, high-cost resources.