UNITED STATES OF AMERICA

BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

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

COMMENTS OF

VIA SCIENCE, INC.

Pursuant to the Federal Energy Regulatory Commission's ("FERC" or "Commission") October 2, 2017, Notice Inviting Comments,[1] Via Science, Inc., ("Via Science" or the "Company") is pleased to submit the following comments in response to the Secretary of Energy's September 28, 2017, proposal of a rule for final action by the Commission ("DOE's proposed rule")[2] under section 403 of the Department of Energy Organization Act.[3] As detailed herein, given the increasing number and severity of weather events in recent years impacting the United States, including but not limited to several extreme hurricanes and the 2014 Polar Vortex, concomitant with the Nation's aging infrastructure, there is a need for accurate and immediate assessments of grid operations. Thus, before implementing the DOE's proposed rule, Via Science first recommends that FERC continue to work with the North American Electric Reliability Corporation ("NERC") and other stakeholders to establish a framework for defining and measuring resilience. To that end, Via Science uses causal analytics to quickly evaluate grid infrastructure and help operators prioritize the types of resources to deploy and the location for

[1] *Grid Reliability and Resilience Pricing*, Notice Inviting Comments (Oct. 2, 2017).
[2] 82 Fed. Reg. 46,940 (Oct. 10, 2017).
[3] 42 U.S.C. § 7173 (2012).

such deployment as needed to mitigate the inherent dangers of weather or other catastrophic events on the ability of ISOs/RTOs to ensure resilient and reliable electric service.

I. COMMUNICATIONS

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II. ABOUT VIA SCIENCE

Via Science creates software applications that identify and prioritize risks to critical infrastructure using a combination of high-performance computing, machine learning, causal analytics and industry expertise. Specifically, Via Science has developed its risk assessment algorithms in conjunction with some of the world's leading companies and government agencies in energy, including with pilot programs at FERC and PJM Interconnection, L.L.C. In addition, Via Science has developed a secure and anonymous way for power companies and regulators to share vital data required for resiliency and reliability using blockchain technology.[4]

The Company has been featured in *Wired Magazine*, *The Wall Street Journal* and *Forbes* for its expertise in causal analytics software applications.

III. COMMENTS

A. Before implementing new rules and/or requirements, Via Science recommends that FERC first establish a consistent mechanism to accurately and consistently measure grid resilience and reliability.

Via Science submits that, before the implementation of the DOE proposed rule, FERC should reform the way grid operators assess infrastructure and determine risks. In his Notice of

[4] Via Science's blockchain technology allows RTOs/ISOs or utilities to share learning without the need to transfer nor share any data.

Proposed Rulemaking, the DOE Secretary outlines several concerns that he has with respect to fuel shortages and appears to suggest that nuclear and coal resources should be fully developed to assure Americans that there will be adequate fuel for system reliance. However, even before monies are spent to develop additional domestic energy resources, it is imperative that assessments be done to determine how prepared the national grid operators are to deal with significant impacts to the grid infrastructure.

"Resilience" is the ability of a system to continue operations despite one or more points of failure. In contrast, "Reliability" is a measure of the continued operation of a system (*e.g.*, the percentage of time operating, the number of operational hours per day, probability of being operational at a random time, etc.).

A general measure of grid resilience is to assess risks (*i.e.,* the impact and likelihood) of a broad range of failure scenarios and to quantify the expectation of the system to survive each failure scenario. In the context of power generation, transmission, and distribution, a more specific metric would be to consider the probabilities of different critical contingencies and, for each, the amount of load shed weighted by the time until recovery (i.e., the energy not served). In addition, measuring grid resilience must include more than simply the binary status of equipment that one would evaluate when determining reliability (*i.e.,* working / not working). Grid resilience requires an evaluation of integrated multi-state systems, including power generation and oil and gas transportation, where overall performance can vary significantly depending on the nature and severity of the event impacting the grid.

Importantly, reliance solely on computerized algorithms to ensure the resilience and reliability of the nation's grid operations is not recommended. Review of the algorithmic results by industry experts is essential to determine whether the computer-generated recommendations

make sense under the circumstances. Most recently, the European Union implemented legislation to ensure that decisions made as a result of a mathematical algorithm be explainable to provide transparency for experts in a particular market to determine if the computer generated resolution is plausible and that the algorithm was not generated using biased data.[5]

Clearly, given the aging infrastructure, the increased frequency of extreme weather, the concerns of terrorism and the life-threatening consequences of significant disruption to the nation's energy supply, the DOE and the Commission are right to continue to assess whether there is adequate supply for a resilient and reliable system. However, it is equally important to use available software, such as Via Science's algorithmic mechanisms to help grid operators prioritize the expenditure to boost supply and/or improve grid infrastructure to avoid failure.

Predicting, measuring, and improving resiliency in more scenarios and contingencies (*e.g.*, n-1-1, n-1-1-1) is now feasible thanks to three critical changes over the last five years: (1) growth in data from and about transmission and distribution systems; (2) increased availability of high performance computing; and (3) advancements in artificial intelligence (AI). Despite the ability to use data, high performance computing and AI to assess and mitigate risks, each ISO/RTO does not assess risk or prioritize risk mitigation consistently. Numerous data points are collected by utilities, transmission providers, etc., and are often submitted to their ISOs/RTOs, as required. The result of these exercises is that each ISO/RTO is inundated with data. Unless the specific ISO/RTO is using state-of-the-art software to collect and organize the data and has people available to review and assess equipment degradation or potential failure consistently, it is difficult, if not impossible to accurately forecast a loss or a need for additional resources. Thus, even if additional energy resources, such as those that the Secretary suggests, were developed for use during times of potential infrastructure loss, without an accurate review

[5] *See* EU Data Protection Directive 95/46/EC) (2017).

and assessment, it is unlikely that the energy resource would be appropriately allocated or deployed.

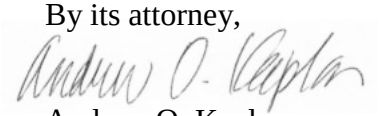
A specific example of a solution that leverages existing assets would be the combined use of real-time data, software simulations and AI to find and optimize recovery paths on-the-fly when multiple critical contingencies occur on the grid (e.g., optimizing circuit switching for recovery).

IV. CONCLUSION

While not the "holy grail", using AI for purposes of evaluating the grid, prioritizing infrastructure maintenance and determining where best to locate and/or deploy resources is an essential first step before reforming market rules or resource requirements. Accordingly, Via Science respectfully requests that FERC require ISOs/RTOs to apply software solutions, particularly AI, to address resiliency.

Respectfully submitted,

VIA SCIENCE, INC.
By its attorney,



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CERTIFICATE OF SERVICE

I, Anne O'Hanlon, hereby certify that the foregoing Comments were served via electronic mail to the service list.

Dated in Boston, MA this 23rd day of October 2017.

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