

Comments of Reliable Energy Analytics LLC

Reliable Energy Analytics, LLC (REA) thanks NESCOE and the New England States' Vision for a Clean, Affordable, and Reliable 21st Century Regional Electric Grid initiative (NEVISION) for the opportunity to respond with written comments, per the January 27, 2021 Request for Comments. The materials contained, and linked, within this document collectively represent the entire set of written comments of REA for consideration by the NEVISION project.

Introduction

Reliable electricity is the life blood that nourishes our economy, sustains our standard of living and helps humanity achieve health and happiness. Electrification is the only viable solution to reduce Greenhouse gases (GHG) from all sectors of the economy, including transportation, heating, manufacturing and construction. Ensuring the reliable flow of electricity is an uncontestable requirement, that cannot be compromised by poor market designs, as was experienced in California during August 2020, as indicated by this statement in the final root cause analysis report issued by CAISO, et al: ***"The Final Analysis confirms there was no single root cause of the August outages, but rather, finds that the three major causal factors contributing to the outages were related to extreme weather conditions, resource adequacy and planning processes, and market practices."***¹

The "Always on Capacity Exchange" (AOCE, pronounced ACE) concept was first introduced on January 16, 2019 via the Energy Central Community Website². The concept evolved and was submitted to the North American Energy Standards Board (NAESB) in 2019 for consideration as an energy industry standardization initiative. The request was denied.

AOCE Description

The AOCE concept has been designed to address known challenges and operational needs of a "Smart Grid", as originally described by ISO New England in their Smart Grid Whitepaper³ and presented to the NIST Smart Grid Interoperability Panel⁴. The AOCE Market Design⁵ aims to achieve the following overarching goal: **Ensure the reliable delivery of electricity to all consumers**. Several objectives are in scope to be achieved as part of meeting this goal:

- Achieve State Energy Goals as a top priority, that properly charges the beneficiaries of each State, without burdening other States' consumers with the costs of another States' program

¹ <http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf>

² <https://energycentral.com/c/em/2019-insights-just-time-capacity-acquisition-through-always-capacity-exchange>

³ https://www.iso-ne.com/static-assets/documents/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2009/may202009/a_smart_grid_report.pdf

⁴ <https://github.com/rjb4standards/Presentations/blob/master/2009-0428-SmartGrid-Roadmap-Summit%5B1%5D.ppt?raw=true>

⁵ https://www.naesb.org/pdf4/weq_aplan100219w2.pdf

- Engage State regulators, local utilities and other stakeholders in the pursuit of a market solution for energy adequacy that requires the approval of State representatives and parties responsible for grid reliability in the final design
- Be flexible enough to integrate new technologies to generate electricity and manage grid operations
- Be market based so that each resource is properly valued for the benefits/services it provides to grid operations, consumers, the environment and society at large
- Efficiently secures future capacity using a just-in-time approach that eliminates the excessive over-buying of capacity that occurs today by ISO's while supporting new, long term capacity construction projects
- Incentivizes investment in the most beneficial and cost-effective technologies used to generate electricity and manage grid operations reliably (including DR) that achieves Societal and Environmental goals determined by each individual State, such as clean air and water
- Provide a vibrant, 24x7, marketplace for Green Energy Buyers, including States and local utilities, to secure PPA's and Investors to trade
- Ensure the acquisition of sufficient grid services capacity needed to ensure a reliable electrical system for all, at a just and reasonable cost to consumers that provides adequate revenues to resource owners that commit to provide their valuable services, when called upon by the ISO
- Shift from purchasing "plain old capacity" to acquiring "grid services" from DER, to support FERC Order 2222⁶, and traditional generators, as determined by ISO New England based on reliability requirements
- The market solution for resource adequacy and power system operational needs must coexist in a symbiotic relationship to produce an optimal outcome for a reliable electric grid, in harmony with State goals and objectives, at a just and reasonable cost.

This goal and these objectives must be achieved, while the energy transition continues to evolve and disrupts "Business as Usual". System operations and planning are becoming increasingly complex and challenging as the electricity supply decentralizes, becoming more widely distributed across the region, and more granular, smaller in size/energy output. Distributed Energy Resources (DER) provide less energy output than a traditional central power plant, however the sheer volume of DER's coming on to the system is capable of producing similar energy output, in sum total, to a central plant. Areas with a high penetration of renewable resources, e.g. Hawaii and Ireland, have adjusted their operations to address these challenges. Ireland, also made adjustments to its wholesale market design by acquiring "grid services" that are needed to balance supply and demand to address the changes these renewable resources are introducing to system operations, i.e. DS3⁷. Pundits in America, such as Rob Gramlich⁸, and across the world have written about the need to acquire grid services within market frameworks, as

⁶ <https://www.federalregister.gov/documents/2020/11/04/2020-24461/participation-of-distributed-energy-resource-aggregations-in-markets-operated-by-regional>

⁷ <https://www.regen.co.uk/wp-content/uploads/Mo-Cloonan-presentation-CER.pptx.pdf>

⁸ <https://gridprogress.files.wordpress.com/2019/10/future-electricity-markets-designing-massive-amounts-of-zero-variable-cost-renewable-resources.pdf>

the energy transition evolves; *“Significant work has also been done to reinvent an appropriate system-services procurement framework for provision of services from any technology.”*

The AOCE market design leverages two proven market-based mechanisms in order to meet these goals and objectives:

- AOCE is modeled after the very successful Capacity Exchange solution in use by the Renewable Energy Buyers Alliance (REBA) and Level Ten⁹ to secure long-term contracts for capacity and energy at a just and reasonable cost, determined by the buyers/sellers of a transaction
- Leverage ISO New England’s Capacity Supply Obligation (CSO) and Capacity Payments process within the Forward Capacity Market (FCM) approach to secure capacity for State Energy Programs and essential grid services, needed for reliability, using a uniform clearing price process, similar to the Day Ahead Energy market, to set the Capacity Payments which these resources will receive. The FCM descending clock auction would be retired; price determination will be established in the Capacity Exchange, using a bilateral transaction process favorable to FERC¹⁰, and cleared through a CSO issuance process conducted by ISO New England, in collaboration with States.
 - o An ISO Reliability Bid process is also included in AOCE, via the Capacity Exchange, in the event of a resource capacity shortage to meet reliability requirements.

AOCE meets¹¹ or exceeds the NEVISION principles¹² listed on the NEVISION website.

AOCE satisfies State Energy Goals¹³, ensuring the State consumers are properly charged Capacity Payments for resources used to meet their State’s energy goals, without burdening consumers in other States. States specify the criteria and other parameters that will determine which resources receive a Capacity Supply Obligation from ISO New England, to meet State energy goals.

AOCE addresses the double payment and price suppression criteria¹⁴ cited in this NEPOOL report¹⁵.

AOCE is designed to acquire the proper amount of grid services capacity¹⁶ that will be needed to maintain reliability, using a market-based approach, based on lessons learned in other areas with high penetrations of renewables, i.e. California and Ireland, as the energy transition unfolds with more distributed and granular supply resources on the grid.

⁹ <https://leveltenenergy.com/marketplace/>

¹⁰ <https://newenglandenergyvision.files.wordpress.com/2021/01/gramlich-nescoe-ra-and-markets-01.25.2021.pptx>

¹¹ <https://energycentral.com/c/ec/aoce-scorecard-achieve-nescoe%E2%80%99s-wholesale-market-design-vision>

¹² <http://nescoe.com/resource-center/vision-stmt-oct2020/>

¹³ <https://energycentral.com/c/ec/achieving-new-england-state-energy-goals-within-aoce-nepool-wholesale-capacity>

¹⁴ <https://energycentral.com/c/ec/aoce-helps-nepool-generators-receive-proper-valuation-and-saves-consumers>

¹⁵ https://nepool.com/wp-content/uploads/2021/01/NPC_20210107_Felder_Report_on_Pathways_rev1.pdf

¹⁶ <https://energycentral.com/c/ec/how-does-aoce-help-isorto%E2%80%99s-acquire-adequate-grid-services-capacity-needed>

AOCE can also be used to secure Power Purchase Agreements (PPA) and acquire Renewable Energy Certificates (REC) as part of the terms and conditions expressed in a capacity exchange transaction¹⁷.

Implementation Steps

Several implementation options are available for the capacity exchange component of an AOCE market design:

- Each State can operate their own AOCE Capacity Exchange platform enabling parties to buy/sell capacity intended for their State Energy Programs
- A 3rd party entity, e.g. Level Ten, could provide a capacity exchange service to one or more States
- ISO New England could operate an AOCE capacity exchange service for one or more States.

ISO New England would operate an AOCE capacity exchange platform for the purchase and sale of grid services capacity specifically to meet reliability needs, e.g. baseload energy, fast ramping, contingency reserves, etc.¹⁸

ISO New England would operate the Capacity Supply Obligation issuance process and determine the uniform clearing prices for grid services capacity resulting in Capacity Payments to resource owners and charges to consumers.

States and ISO New England share responsibilities for deciding which capacity resources should receive CSO's to meet State Energy goals and reliability requirements. States provide ISO New England with criteria and other parameters used to select resources from their Capacity Exchange platform to receive CSO's, including max price (MW/day), quantity and other parameters. States also engage with ISO New England to approve the final set of resources selected by ISO New England to receive CSO's and Capacity Payments, prior to any results are approved.

Several implementation steps, and decisions, need to be addressed within a consensus-based forum for all interested stakeholders to participate, including the following open items:

- How to implement the AOCE capacity exchange, one for all or individually for each State
- Transitioning State RFP acquired resources into AOCE
- Transitioning existing FCM Capacity Supply Obligations into AOCE
- Cost allocations for Capacity Payments issued to resources providing grid services that benefit all consumers across the region, i.e. fast ramping.
- Cost allocation for Capacity Payments issued to baseload plants that service a broad area, crossing State boundaries, e.g. Millstone and Seabrook nuclear plants. Generator shift factors used in power flow analysis may provide a path to help achieve this objective.
- The need for more transmission capacity as the grid continues to decentralize supply.

¹⁷ A detailed data dictionary, along with Bid and offer transactions showing REC and Energy parameters is available upon request.

¹⁸ https://www.naesb.org/pdf4/weg_aplan100219w4.pdf

Summary

This document describes the Always on Capacity Exchange market design concept to achieve State Energy Goals, expressed in the NEVISION principles, while simultaneously acquiring essential grid services needed to meet the overarching goal of a reliable electric system. The AOCE design recognizes, and accommodates the shift from “plain old capacity” to a specific mix of grid services, in order to continue operating the grid reliably and cost effectively, keeping consumer costs low and generator profits reasonable, applying lessons learned in other markets and by other Grid operators, e.g. California, Hawaii and Ireland.

REA appreciates the opportunity to submit these comments and looks forward to working with NESCOE and NEPOOL to pursue a pathway forward for the region.

Information about REA is available here:

<https://github.com/rjb4standards/Presentations/blob/master/README.md>

Respectfully submitted,

 s/Richard Brooks/ January 29, 2021

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