UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

State Policies and Wholesale Markets Operated by ISO New England Inc., New York Independent System Operator, Inc., and PJM Interconnection, L.L.C.	**Docket No. AD17-11-000**

Pre-technical Conference Statement of Peter D. Fuller,
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I. The Crossroads in Today's Power Markets

NRG appreciates the opportunity to appear at this technical conference. The challenge before the Commission, the states and all other stakeholders is no less than the question of whether the power industry will continue to use competitive markets as the basis for investment decision-making, and in doing so, continue the radical progress achieved in the past two decades in transferring financial and operational risk from electric consumers to private investors and in significantly improving the economic efficiency and environmental performance of the power system in the RTO/ISO regions.

The comments below sketch a vision of the technological capabilities and markets necessary to realize a power system that is affordable, reliable, and environmentally sustainable. No one in today's power sector can seriously debate the need to address climate change, create jobs, strengthen economic growth, and further position the United States as a global technology leader. The question is *how* we realize such outcomes. NRG asserts that we can and must build on the foundation of the existing competitive wholesale markets mechanisms to establish next-generation markets through which states can realize common public policy goals with the *greatest technological innovation* and *at the lowest costs*.

II. Introduction to NRG

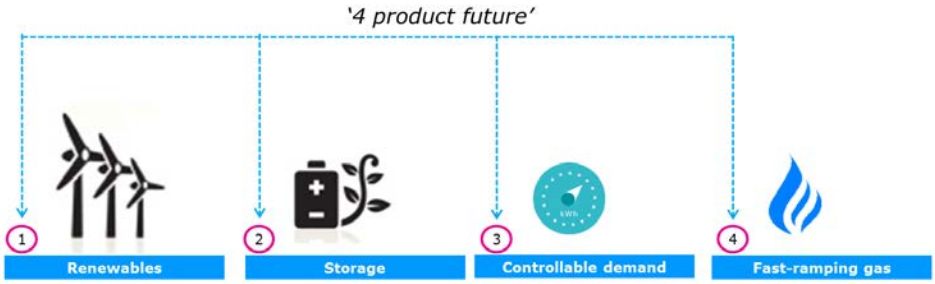
NRG is at the forefront of changing how people think about and use energy. Our company is deeply involved in a number of proceedings across the country designed to advance the competitive deployment of innovative, clean energy resources, and integrate these resources into the wholesale and retail power systems. NRG is the nation's largest competitive power producer, with a diverse resource mix that includes approximately 50,000 megawatts of both renewable and conventional generation, including approximately 25,000 megawatts located in the three northeast RTO/ISOs. NRG affiliates also aggregate over 1,700 megawatts of demand response in the northeast, and NRG's retail businesses serve nearly three million customers across more than a dozen states, including in ten states across the three northeast RTO/ISOs. By giving customers the cutting-edge tools to better monitor and manage energy usage, NRG is a pioneer in enabling customers to make smarter, more sustainable choices.

III. The 'Four Product Future'

NRG envisions the electric grid of the future as comprising four major elements, depicted in Figure 1 below. *First*, the foundation of the clean energy grid is renewables, such as wind and solar, to provide

the vast majority of the energy needs of the system with no emissions. *Second*, storage, both at grid-scale and in distributed applications, will store renewable energy when renewable production exceeds that needed to serve demand and to serve demand when renewable energy production is not sufficient. *Third*, pervasive load management at the end-user level, in the form of dispatchable behind-the-meter generation, as well as load-shifting and other load-shaping strategies, will greatly enhance the ability to match demand to variable supply. *Finally*, a complement of flexible and fast-responding peaking plants will provide the additional balancing capability for short-term ramping and contingency needs. Taken together, these products will provide the MWs and MWhs when and where necessary to reliably operate a grid defined by renewable energy resources and low emissions. Market designs and policy should be shaped with the objective of encouraging, enabling and sustaining this resource mix.

Figure 1
A vision for the future sustainable power system



IV. The Three-Stage Roadmap for Competitive Wholesale Markets

In New England, we have referred to the three stages of the challenge before us as '***Accommodate***' state actions to advance clean energy objectives, '***Achieve***' state clean energy objectives via ISO markets, and '***Adapt***' wholesale markets to high penetration of renewables. We believe the Commission and the RTO/ISOs must embrace this 'triple-A' approach to enable competitive wholesale markets to help facilitate the transition to this dramatically new resource mix, and to continue to support efficient competitive operations and investment decisions.

(a) We should '***accommodate***' state actions that seek to accomplish clean energy or other worthy objectives that the markets are not designed for.

States are not waiting for market re-design, and are exercising their authority over generating facilities by implementing a range of RFPs, clean energy mandates and other cost-support mechanisms for chosen resources or resource types. These actions have undeniable impacts on competitive wholesale markets and on the parties that depend on wholesale market revenues, including demand response providers as well as generators. NRG recommends a strong Minimum Offer Price Rule ("MOPR"), covering both existing and new resources that receive state-backed subsidies. The MOPR should accompany the two-tier pricing as proposed by NRG in the New England IMAPP process, or a similar mechanism that balances the desire of states to not 'double-purchase' capacity for resource adequacy purposes with the Commission's obligation to ensure just and reasonable rates in the wholesale markets.

(b) We need new market constructs that will '***achieve***' the objectives of the states.

The Commission should ensure that competitive market principles are utilized to achieve state objectives at just and reasonable cost, at least those that can be effectively quantified on a fungible basis – such as minimum quantities of renewable or clean energy, or maximum quantities of carbon emissions. NRG, among others, has proposed a forward market for clean energy commitments, modeled on the Forward Capacity Market.[1] Such a market, properly integrated with the FCM (which is intended to be *the* investment decision-making structure in New England) could provide high confidence of achieving the states' targets in the most cost-effective manner, the revenue certainty necessary to finance and build new renewable energy resources, and an explicit treatment of the pricing of resource adequacy contributions in FCM from resources procured through a clean attribute market, or vice-versa.

This last element is critical. The FCM in New England (just as the RPM in PJM) is designed to be the single gateway for capacity to enter and exit the market, and is intended to provide the 'go/no-go' decision for new resources seeking to enter and existing resources seeking to leave. If a forward clean attribute market is implemented that performs that same function for a certain subset of resources (*i.e.*, those that meet the renewable or low-emission eligibility criteria), the bidding and pricing functions will need to be coordinated between the two markets to ensure efficient outcomes.

(c) Finally, we need to confront the challenge that is presented by a system characterized by a majority of resources with zero or low marginal costs.

Historically, the electric system has been characterized by fossil fuel inputs and thermal conversion efficiencies (heat rates) to establish marginal costs and a merit order for economic dispatch. This requires states and markets to '***adapt***' the power system to new, zero-marginal cost technologies. As the proportion of renewables and other zero-marginal cost resources grows on a system, zero or negative prices can proliferate. We are already seeing this trend in places like Germany, Spain, California and Texas. This challenges the investment thesis in markets without a viable capacity market, and also challenges the real-time operability of the system since curtailment and balancing decisions can no longer logically be made on the basis of marginal costs. While there is no clear answer to this challenge as of yet, NRG believes that some combination of performance-based forward capacity markets (such as those administered by ISO-NE and PJM), perhaps linked with a forward clean attribute market, one or more ramping or flexibility products, and well-designed scarcity pricing are likely to be necessary components.

V. Two-Tier Pricing as a Means to Accommodate State Actions

NRG has presented its proposed approach to managing quantity and compensation in the ISO-NE FCM at several meetings of the IMAPP group, and discussed it in several other forums over the past several months.[2] The proposal is built on four central objectives:

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[1] Notably, NRG's IMAPP proposals do not include an explicit price for carbon beyond the existing price established in the Regional Greenhouse Gas Initiative. NRG is not opposed to well-designed carbon pricing mechanisms, especially those that would apply economy-wide and control for leakage, but NRG is skeptical that carbon pricing alone can support the investment necessary to transform the power system resource mix.

[2] NRG's IMAPP presentations are available online at: http://nepool.com/IMAPP.php. NRG's presentations and regulatory filings are available on the company's website at: http://www.nrg.com/company/energy-policy/

(a) To allow state-backed resources to take on obligations in the FCM consistent with their ability to support resource adequacy, while recognizing that the fixed-cost recovery for these resources is coming from outside the market.

(b) To ensure that resources relying on market revenues are able to access efficient clearing prices to maintain reliability and avoid Reliability Must Run contracts.

(c) To ensure that all resources being counted for resource adequacy have comparable, if not identical, performance obligations.

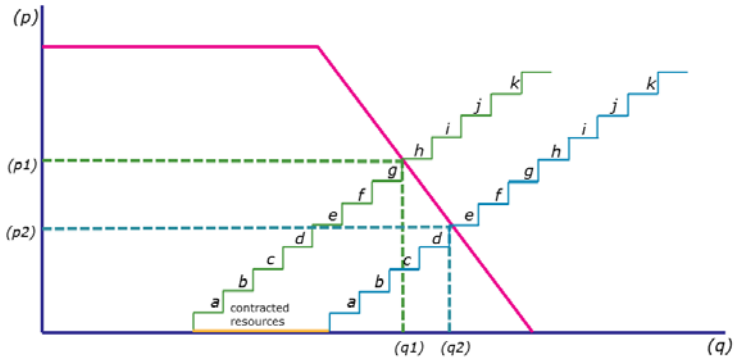
(d) To create a financeable capacity market structure that continues to incent investment when and where needed to support resource adequacy, even as state-sponsored resources proliferate.

NRG's proposed approach is designed to ensure reliability and continued investment in resource adequacy, while providing states the flexibility to contract with selected resources to meet carbon and renewable energy goals pursuant to statutory requirements. A critical feature of the approach is the application of a strict MOPR to all capacity in the initial pass of the capacity auction, to produce an auction outcome that would occur in the absence of state intervention in contracts and investment decisions. The MOPR would need to apply to all resources to identify whether the resource was set to receive revenue backed by the state, whether through direct power purchase, non-bypassable charges to retail customers or some other mechanism.

The purpose of this first step is, again, to produce a capacity auction result that would occur if all resources were making their investment and retirement decisions purely on the basis of the revenues they could expect from the RTO/ISO markets. The results of this pass would produce a provisional set of capacity obligations on a set of identified resources, at a given price (or set of prices, for example if there is locational price differentiation). For purposes of this discussion, call the total amount of payments for this set of obligations, P1 * Q1 (where *p* = price and *q* = quantity).

In the second pass of the auction, resources backed by state revenues that did not clear in the initial pass would be inserted into the supply curve as price-takers, which has the effect of shifting the supply curve to the right, and results in the second pass of the auction clearing at a lower price and with a higher quantity (Figure 2).[3]

Figure 2: Two Tier Pricing Illustration



[3] This discussion assumes a downward-sloping demand curve generally in the form used across all of the northeast RTO/ISOs.

Under NRG's proposal, all of the resources clearing in the first pass would be paid the first price, P1, and state-backed resources that cleared only in the second pass would be paid the second price, P2. Since giving capacity obligations to all of the resources that cleared in either the first or second pass would result in more capacity than indicated by the demand curve at the cleared price (Figure 3), NRG proposes to pro-rate the quantity of obligation on each resource (Figure 4) such that the total cost of the obligations in the capacity market would be equal to the cost of the initial auction, P1 * Q1.

Figure 3: Two-tier Pricing Illustration – 'In-Between Units'

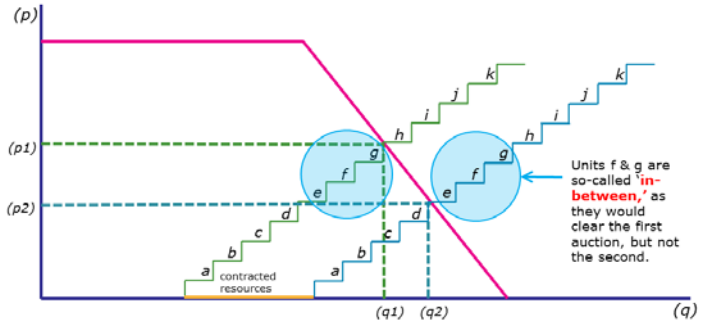
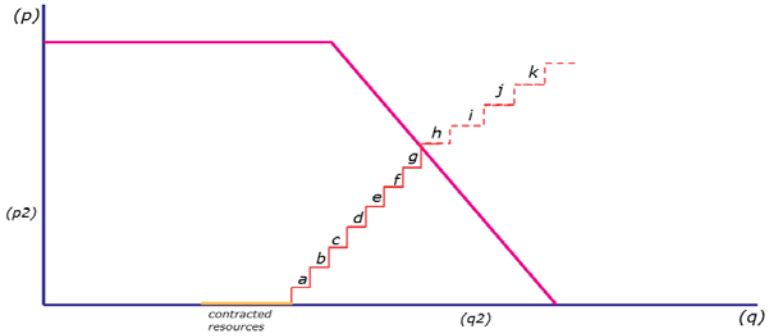


Figure 4: Two-Tier Pricing Illustration with Capacity Pro-rating



There are undoubtedly additional details to be worked out, but NRG's continuing analysis of this approach strongly suggests that it will accommodate significant (though not unlimited) quantities of state-backed resources with limited quantity pro-rationing (e.g., less than 5%) in a system with the size and price parameters of ISO-NE. The quantity pro-rating is likely a benefit to most resources as a hedge against performance penalties under the ISO's performance incentives structure (or in PJM's similar Capacity Performance design). The other primary benefit of this particular approach is that it reduces the risk faced by a resource that might otherwise be marginal in the capacity auction. A resource that is on the margin in the first pass of the auction is competing against other resources based on their true economics, and if state-backed resources enter the market, the marginal resource will experience a small reduction in its quantity obligation, rather than facing the risk of being entirely displaced by otherwise uneconomic state-backed capacity.

VI. Conclusion

Wholesale markets were designed for reliability, not particular attributes of power plants unrelated to their ability to support operational and planning reliability; not environmental performance, and not local or regional economic development attributes. That states are now prioritizing these latter

objectives is not an indication that the markets have failed, but that new thinking is needed on what the markets should be designed to achieve.

The need to address climate change and replenish aging generation infrastructure across the United States combine to represent the greatest innovation challenge the power industry has ever faced. If we are to meet this challenge, it is essential that we advance competition as a means of ensuring that each dollar of capital invested into the sector flows into productive assets compatible with the next 20 to 30 years of public policy. Competitive market mechanisms ensure that capital deployment into infrastructure maximizes scarce financial resources through disciplined risk management and relentless technological innovation.