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Reliability Options: A Market-Oriented Approach to Long-Term Adequacy

The issue of generation adequacy is not going away and every electricity market will eventually have to deal with it. The author proposes a method for assuring long-term adequacy while at the same time reducing price and quantity volatility and giving markets long-term stable equilibrium prices.

Miles Bidwell

I. Introduction

In the summer of 2004, Alex Henney and I wrote an article, "Will the New Electricity Trading Arrangements Ensure Generation Adequacy?" which appeared in the August/September 2004 issue of this journal. In that article we explained our reasons for doubting that an energy-only electricity market could ensure generation adequacy, by which we meant calling forth sufficient new investment to maintain reasonable levels of reliability over time. In the article we mentioned that

we were working on a market-oriented approach that would ensure long-term adequacy while not impeding an efficient short-term energy market. In this article I explain that approach — the reliability options (RO) method for ensuring generation adequacy.

II. Context

Over the past two years, Alex Henney and I have been developing the reliability options method with a view toward it

being used in a European context. In the spring of 2004, the FERC established Docket No. ER03-563-030, *Devon Power LLC, et al.*, the purpose of which was to develop a mechanism for ensuring long-term adequacy within the context of the locational-based, installed-capacity (ICAP) approach proposed by the New England ISO. ISO-New England's (ISO-NE's) witness, Dr. Steven Stoft, filed Direct Testimony on Aug. 31, 2004. In his testimony, Dr. Stoft identified the same capacity market flaws that I had identified and he proposed a new type of ICAP that fixed these flaws and did so in ways that were not totally dissimilar from the RO approach. Power Economics, Inc., had been retained by the Connecticut parties¹ to participate in the case, and this participation would now include submitting testimony on an RO version of Dr. Stoft's approach.²

Dr. Stoft's assignment was to develop a locational installed capacity-type mechanism (LICAP) incorporating a so-called "demand curve" of the type that had been implemented in New York State a year before.³

In his testimony on behalf of the ISO-NE, Dr. Stoft identified and addressed two significant shortcomings of the conventional ICAP approach, namely (1) the lack of an incentive for generators to be running at times of stress when the system most needs them, and (2) the related problem that generators can profitably withhold output during periods of scarcity and

stress in order to create larger price spikes. Dr. Stoft proposed two measures to rectify these shortcomings. These measures fix:

(1) the lack of an incentive for generators to be running when the system most needs them, by basing the capacity payment on availability during hours of system stress, and

(2) the related problem that generators can withhold genera-

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tion during periods of scarcity, by subtracting the price spike revenue from the capacity payments.

Dr. Stoft's market design is clearly an improvement over existing capacity markets; however, the RO approach achieves these same goals in a less complex, more elegant, and more market-compatible, manner; and, in testimony submitted by Power Economics, I explained that the RO approach should be viewed as the next evolutionary progression in methods for dealing with long-term generation adequacy in that the RO approach goes a step beyond the New York-type

demand-curve approach by including the positive aspects of the demand curve without including the negative aspects.

Unfortunately, New England consumers and generators will not have the opportunity of enjoying the most efficient electricity market possible as a result of the current proceeding. Power Economics' testimony on the RO approach was stricken from the court record after the Federal Energy Regulatory Commission (FERC) ordered the Judge to not consider any alternatives to a New York-type demand curve.⁴

The RO method was not the only potentially superior method not examined. Dr. Stoft has previously developed an approach to ensuring long-term adequacy based on a combination of price caps and a greater amount of operating reserves such that the energy price during peak periods is sufficient to adequately reimburse generators for their marginal capacity costs. This approach, explained in his IEEE article, "The Demand for Operating Reserves: Key to Price Spikes and Investment,"⁵ is superior to any capacity market approach. In order to choose the very best electricity market structure, the recent hearings should have been concerned with evaluating the RO approach and the Stoft reserves approach. But, with all other approaches removed from consideration, New England can only have Dr. Stoft's significant market improvements

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