

MEASURING MARKET POWER IN THE U.S. ELECTRICITY BUSINESS

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I. INTRODUCTION

Efforts to deregulate the United States' wholesale electricity business¹ have dramatically increased the attention paid to the question of how to measure market power. The Federal Energy Regulatory Commission (the FERC or the Commission) has used three quantitative methods: (a) the Hub-and-Spoke method,² to judge whether a seller should be given the right to sell at unregulated (market-based)³ rates; (b) the Delivered Price Test,⁴ to determine whether a proposed merger raises competitive concerns; and (c) Market Modeling,⁵ inappropriately used in California, to detect the abuse of market power and to set limits on the electricity prices that are allowed to be charged. Recently, the Commission employed a fourth method, the Supply Margin Assessment (SMA), to replace Hub-and-Spoke. The Commission's new method has ignited a significant debate.⁶

The purpose of this article is to describe, critique, and contrast these four different methods of measuring market power. However, before describing these four methods, it is useful to review the basic definition of market power and the key steps in any market power analysis. By definition, market power is the ability to profitably increase prices above competitive levels for a sustained period of time.⁷ Most traditional measures of

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1. See generally 16 U.S.C. § 824(d)(2001) for a definition of wholesale electricity.

2. Vantus Energy Corp., 73 F.E.R.C. ¶ 61,099 (1995).

3. The Commission defines market-based rates as, "whatever is agreed-upon by the buyer and seller." See generally *How to Get Market-Based Rate Approval*, at <http://www.ferc.fed.us/electric/pwrmk/PMhow.htm> (last visited Mar. 6, 2002).

4. *Orion Power Holdings Inc.*, F.E.R.C. Docket No. EC02-11-000 (2001).

5. *San Diego Gas & Elec. Co.*, 95 F.E.R.C. ¶ 61,115 (2001). See also *San Diego Gas & Elec. Co.*, 95 F.E.R.C. ¶ 61,418 (2001).

6. The debate actually began when a Commissioner expressed concern about the continued use of Hub-and-Spoke. See generally *San Manuel Power Co., L.L.C.*, 96 F.E.R.C. ¶ 61,089 (2001) (Massey, W., dissenting). Commission Staff responded with a paper discussing four alternative approaches. See also FERC Staff's Market Based Rates Options Paper (Sept. 26, 2001), available at http://www.ferc.gov/calendar/commissionmeetings/discussion_papers.htm (last visited Mar. 6, 2002); Order on Triennial Market Power Updates And Announcing New, Interim Generation Market Power Screen Mitigation Policy, *AEP Power Marketing, Inc.*, 97 F.E.R.C. ¶ 61,219 (2001).

7. See generally U.S. DEPT. OF JUSTICE AND FED. TRADE COMM'N, *Horizontal Merger Guidelines*, at "Purpose, Underlying Policy Assumptions and Overview," available at <http://www.ftc.gov/bc/docs/horizmer.htm> (last visited Feb. 27, 2002).

market power are "indirect." That is, they use market shares or derivative measures of market concentration to suggest that competitors in a market have the ability to profitably raise prices. With any method of measuring market power, the key first steps are to define the geographic scope of the market and the product types to be assessed.⁸ The larger the scope of the market, in geographic terms or product types, the less likely it is that market share or market concentration will be high enough to trigger market power concerns.

II. THE HUB-AND-SPOKE METHOD

As already noted, the Commission has used the Hub-and-Spoke method of measuring market power when deciding whether to grant market-based rate authority to an electric generator.⁹ If the electric generator applying for market-based rate authority has a market share of less than 20% to 30%, the Commission will generally grant it the right to sell at unregulated prices in the wholesale market.¹⁰ The most notable aspect of the Hub-and-Spoke methodology is that it defines the geographic scope of the market in terms of open access transmission. In the late 1980's and early 1990's, the Commission did not have the general authority to order a utility to open its transmission system for use by competing suppliers. The Commission could, however, order open access in specific cases and it promoted competition by doing just that. If a utility wanted the freedom to charge market-based rates in nearby wholesale markets, then the Commission, by using Hub-and-Spoke, encouraged that utility to open its transmission system.

In Hub-and-Spoke, if the applicant is a traditional utility, each utility directly interconnected with the applicant via electric transmission lines is said to be a "first-tier" utility. A market power analysis must be conducted for each first-tier utility.¹¹ With respect to the geographic extent of the market, the first-tier utility being assessed becomes the "hub" market and it is assumed that the suppliers that can compete in the hub market are: (a) generators in the hub, (b) generators in any directly interconnected utility territory, plus (c) generators that could reach the hub using the transmis-

8. *Id.* at "Market Definition, Measurement and Concentration."

9. *Louisville Gas and Elec. Co.* contains an explanation of generation market power analysis and barriers to entry or reciprocal dealing. 62 F.E.R.C. ¶ 61,016 (1993). See *Heartland Energy Serv., Inc.* for an explanation of transmission market power. 68 F.E.R.C. ¶ 61,223 (1994).

10. See generally *Southwestern Pub. Serv. Co.*, 72 F.E.R.C. ¶ 61,208 (1995). See also *Vantus Energy Corp.*, 73 F.E.R.C. ¶ 61,099 (1995).

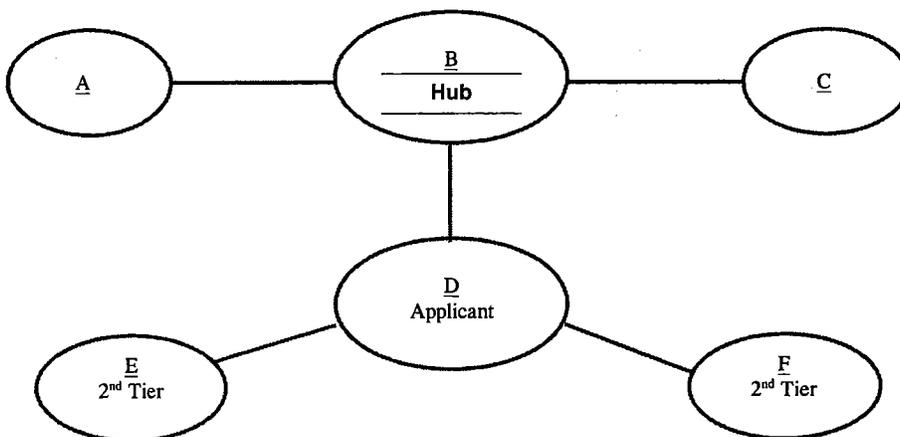
11. See generally Order No. 888, *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, [Regs. Preambles 1991-1996] F.E.R.C. STATS. & REGS. ¶ 31,036, at 31,656-57, 31,818 (1996), *order on reh'g*, Order No. 888-A, F.E.R.C. STATS. & REGS. ¶ 31,048 (1997), *order on reh'g*, Order No. 888-B (1997), 81 F.E.R.C. ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C (1998), 82 F.E.R.C. ¶ 61,046 (1998), *aff'd in part and rev'd in part sub nom*, *Transmission Access Policy Study Group v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *cert. granted*, 121 S.Ct. 1185 (Nos. 00-568 (in part) and 00-809), *cert. denied*, 121 S.Ct. 1188 (No. 00-800) (Feb. 26, 2001) [hereinafter Order No. 888].

sion facilities of the applicant via its open access tariff (utilities linked to the hub in this way are called “second-tier” utilities).¹²

With respect to defining product types in Hub-and-Spoke, there are typically two products: (a) total installed generating capacity (Installed Capacity), which is used to indicate competition for the sale of electric energy and (b) uncommitted generating capacity, which is used to indicate competition for year-round electric capacity sales.¹³ As the name implies, Installed Capacity is the sum of the capacity of all the power plants in the geographic scope of the market. The term “uncommitted” is meant to reflect the fact that many electric markets are only partially deregulated such that only some of the suppliers are said to have power plant capacity freed up to compete in the wholesale market. Uncommitted capacity is total Installed Capacity less the needs of a supplier’s (utility’s) retail customers still receiving regulated service (“native load obligations”).

Figure One illustrates how Hub-and-Spoke defines the geographic scope of the market. Each oval represents a utility service territory and all are connected by transmission lines. Utility D is the Applicant and Utility B is one of its first-tier utilities. Utility D is being assessed for market power in Utility B’s service territory. The geographic scope of the market for B could be limited to utilities to which it is directly interconnected (A, C, and D). However, if the Applicant (Utility D) offers to have open access transmission, the Commission allows the market to be expanded to include two more second-tier utilities (E and F).

A. *Figure One: Hub-and-Spoke Illustrated for Market Power Analysis of Applicant D with Market “Hub” Centered on Utility Area B*



12. *Id.* at n. 145.

13. See generally *Southwestern Pub. Serv. Co.*, 72 F.E.R.C. ¶ 61,208 (1995).

After establishing a strong beachhead for competition by ordering open access on a case-by-case basis, the Commission issued a blanket order in 1996 (Order No. 888) for all utilities under its jurisdiction to offer open access.¹⁴ With this order, Hub-and-Spoke lost some of its purpose.

Hub-and-Spoke has been criticized in at least three respects. First, it fails to take account of realistic constraints to competition in the form of transmission limitations. With Hub-and-Spoke, if a utility area interconnected to the hub market had 10,000 MW of generating capacity within its borders, it was assumed all 10,000 MW could compete in the hub market. In reality, physical transmission limits might limit that competition significantly. For example, at any point in time, the transmission lines might limit what could actually flow into the hub market to 1,000 MW. Second, Hub-and-Spoke is criticized because it fails to account for the fact that some of the installed capacity might be uneconomic. That is, high heat rates (how much fuel is used for each kwh produced) or high outage rates (how often the plant is unavailable to run) might limit competition to fewer generating units than those included in Installed Capacity. Third, Hub-and-Spoke is criticized because the basis for the 20% to 30% market share threshold is unclear.¹⁵ This criticism really derives from the fact that Hub-and-Spoke is an *indirect* method of measuring market power. That is, it uses market share to indicate if market power is present, rather than prove directly that market power was exercised.

III. DELIVERED PRICE TEST

The next two methods – Delivered Price Test and Market Modeling – happen to be responses to the three criticisms of the Hub-and-Spoke method. With respect to the Delivered Price Test,¹⁶ this method addresses the first two criticisms leveled at Hub-and-Spoke by using what is termed Economic Capacity.

By using Economic Capacity as opposed to Installed Capacity, the FERC narrows the number of suppliers that are said to compete in the market. Power plant capacity is considered to be Economic Capacity if: (a) it can physically be delivered – i.e. there is sufficient transmission capacity to deliver the power to the (hub) market; and (b) it is price competitive – i.e. the capacity can produce and deliver power at a variable cost no greater than 5% above the current market price.¹⁷

14. See generally Order No. 888, *supra* note 11. See also Order No. 2000, *Regional Transmission Organizations*, F.E.R.C. STATS. & REGS. ¶ 31,089 (1999)[hereinafter Order No. 2000], *order on rehearing*, Order No. 2000-A, F.E.R.C. STATS. & REGS. ¶ 31,092 (2000); *petition for cert. filed, Public Utility District No. 1 of Snohomish County, Washington v. FERC*, Case No. 00-1174 (2001).

15. See generally *Sierra Pacific Power Co.* 96 F.E.R.C. ¶ 61,050 (2001) (Massey, dissenting). (“And second, the 20% market share threshold is too simplistic. Surely our painful experience in the California market has demonstrated that suppliers can successfully exercise market power and drive up prices with market shares far below 20%.”).

16. The Delivered Price Test is used to assess the competitive effects of proposed mergers. See generally *Orion Power Holdings Inc.*, 98 F.E.R.C. ¶ 61,136 (2001).

17. See generally Order 592, *Inquiry Concerning the Commission's Merger Policy Under the Fed-*

While the shift to Economic Capacity is the core change brought on by the use of the Delivered Price Test, there are other important aspects that make it a stricter test than Hub-and-Spoke. For example, a Delivered Price Test requires significant market segmentation. Specifically, the test is done for separate time periods. It is typical, for example, to define at least nine time periods (a super-peak, peak and off-peak period in each of three seasons). The test also tightens competition by including other factors, such as outage rates by type of technology. Competition is narrowed in the sense that some capacity is simply assumed unable to compete for maintenance reasons.

The Delivered Price Test also differs from Hub-and-Spoke in the ultimate measure used to indicate market power concerns. Instead of looking at market share for an individual supplier, the Delivered Price Test looks at market concentration for the entire market, as measured by Herfindahl-Hirschman Indexes (HHIs). An HHI is the sum of the squares of market shares. For example, if there are ten suppliers in a market, each with a 10% share of Economic Capacity, then the HHI is 1,000.¹⁸

HHIs are calculated pre- and post-merger for each market time period. If the post-merger HHI for the market is 1,000 or less, the merger falls within the FERC's "safe harbor," presumably raising no competitive concerns. If the post-merger HHI is between 1,000 to 1,800 and the merger increases the HHI by 100 points or more, the merger raises some competitive concerns and additional assessment is required. If the post-merger HHI is above 1,800 and the merger causes an increase of fifty points or more, then the merger raises some competitive concerns and additional analysis is required. If the increase in HHI is 100 points or more, the merger is presumed to create or enhance market power.¹⁹

With respect to the definition of the extent of the geographic market, the Delivered Price Test, in concept, sets no rigid boundaries. By using Economic Capacity, the geographic boundaries of the market could be defined by the range over which price-competitive capacity is found. That is, since delivery costs are included when defining Economic Capacity, the geographic boundaries could end at the point at which it becomes too expensive to get power to the market being assessed.

With respect to product types, the Delivered Price Test is similar to the Hub-and-Spoke Method in the sense that: (a) Economic Capacity is generally meant to indicate competition for energy sales and (b) *Available* Economic Capacity (defined as Economic Capacity less native load obligations) is said to indicate competition for capacity.²⁰ The FERC also re-

eral Power Act: Policy Statement, III F.E.R.C. STATS. & REGS. ¶ 31,044, at 30,131-2 (1996) [hereinafter Order No. 592].

18. *Id.* at n.33.

19. *Id.* See also Order No. 642, *Revised Filing Requirements Under Part 33 of the Commission's Regulations*, 65 Fed. Reg. 70,983 (2000) (to be codified at 18 C.F.R. § 33) [hereinafter Rule 642].

20. Order No. 592, *supra* note 17, at 30,131-2.

quires an assessment of competition in ancillary services markets.²¹

As with Hub-and-Spoke, there is a clear policy goal being pursued through the use of the Delivered Price Test. Again, merger proceedings were used as a forum to promote open access transmission; the FERC would approve a merger with the condition that the applicants open their transmission system to competitors.²² The move to the Delivered Price Test was meant to tighten the test for approving mergers. Specifically, the Commission adopted this test to prevent the merger of large adjacent utilities. It worked. Most large-scale mergers between utilities today involve utilities that are physically distant from one another. The reason being that, with the Delivered Price Test, if there is no overlap, there is no problem. That is, if the two merging parties do not compete in the same geographic areas, the merger would not cause the fifty to 100 point HHI increase the Commission must see to document competitive concerns.

Four points are worth noting about the Delivered Price Test. First, the Delivered Price Test is data intensive.²³ The test often requires the creation of a huge database including power plant-by-power plant capacity and cost data, as well as extensive information on transmission capabilities. It also requires information on "market prices," which is problematic for areas of the country in which there is no established market. Information on power sales contracts is also required because the Commission requires capacity to be allocated to the party that has control of that capacity, which can be the buyer rather than the owner of that capacity.²⁴ All of this means that the completion of a merger filing is very expensive and, with inevitable data limitations, makes the analysis dependent on assumptions rather than purely on facts.

Second, the Delivered Price Test is criticized because it can lead to perverse results. For example, take a market in which there remains a large number of vertically integrated utilities. When using *Available Economic Capacity*, these utilities will be shown to control little capacity because the capacity used to meet the needs of their retail native load will be deducted from their total Economic Capacity.²⁵ With that deduction, new entrants into the market may appear to have large shares of the small amount of remaining capacity and, therefore, a merger among new entrants may not be approved. This is perverse in the sense that, in a market still heavily controlled by a few regulated monopolies, the last thing the Commission would want to do is to dissuade new entrants from coming into the market; new entry is the only hope of actually bringing competition to the area.

21. See also Rule 642, *supra* 19, at 31,844.

22. See generally Order No. 888, *supra* note 11, at 31,643-4.

23. See generally Order No. 592, *supra* note 17. See also Rule 642, *supra* note 19.

24. See generally Rule 642, *supra* note 19, at 31,888.

25. *Id.* at 31,888-9. The Commission has recognized the criticism of uncommitted capacity, a related concept of Available Economic Capacity. See generally *EME Homer City Generation L.P.*, 86 F.E.R.C. ¶ 61,016 (1999).

Third, the Delivered Price Test is still an indirect method of measuring the potential for exercising market power. That is, while the Commission uses the HHI thresholds, there is no demonstration that, if the HHI exceeds the 1,000 point level, the merging parties actually have the ability to profitably raise prices above the competitive level for a sustained period of time.

Fourth, the Delivered Price Test takes no special notice of very large-scale mergers (mega-mergers). In these mega-mergers, the Commission has maintained its “no overlap, no problem” standard. There is the concern, however, that by approving mega-mergers, the Commission is picking winners in the competitive marketplace. Big is not bad, though the preference should be that companies get big through competitive investments such as building new merchant power plants and buying divested utility assets, rather than getting big through government approval of a huge merger.²⁶

IV. THE MARKET MODELING METHOD

Market Modeling is the only method of the four that has the potential to *directly* measure market power, and therein lies its appeal. With this method, computer models are designed to predict market prices in the wholesale electricity market. The first run of the model projects prices for one or more years in a fully competitive market – these prices become the competitive baseline prices. The second run of the model tests whether a supplier (or two merging suppliers) has the ability to profitably increase prices above those in the competitive baseline for a sustained period of time. That is, the model would be used to test whether a supplier could profitably increase market prices by physically withholding part of its capacity from the market or by utilizing various price bidding strategies.

As with the Delivered Price Test, Market Modeling could let price competitiveness set the geographic range of the marketplace, rather than set rigid boundaries. With respect to product types, Market Modeling focuses mostly on energy markets, but it can also reflect in its predicted market prices the need for new capacity in out-year projections. In this sense, the Delivered Price Test does a better job than the other two methods in assessing capacity markets.

The Commission has not adopted Market Modeling officially so one cannot say it has a policy goal for this method. However, for those who have most visibly used Market Modeling, the policy goal is to justify price controls.²⁷ Its use in California is premised on the view that such Market Modeling can tell us precisely what the market prices should be, and thereby gives us the level at which prices should be capped or refunds

26. See generally Direct Testimony of Craig R. Roach, *American Elec. Power Co.*, F.E.R.C. Dockets Nos. EC98-40-000, ER98-2770-000, ER98-2786-000 (Apr. 1999).

27. Eric Hildebrandt, Further Analyses of the Exercise and Cost Impacts of Market Power in California Wholesale Energy Market, *San Diego Gas & Electric*, F.E.R.C. Docket No. EL00-95-012 (July 12, 2001).

should be ordered. As revealed in the criticisms discussed below, this is not the case for these overly-simplified models.

Despite its conceptual appeal as the only direct method of measuring market power, Market Modeling is subject to a range of practical and policy criticisms.²⁸ Five points illustrate the nature of the criticisms. First, Market Modeling is even more complicated than the Delivered Price Test because it requires even more detailed data input.

Second, Market Modeling is conceptually challenging because it requires very sophisticated computer models. The sophistication is made necessary by the nature of the business transactions that must be simulated. The model must be able to simulate the investment decisions for new entrants and the bidding strategies of all suppliers.²⁹

Third, Market Modeling is criticized because of a tendency to do only half the needed work. That is, in the market modeling done for California, only a single model run was done to create what was alleged to be the competitive baseline. Prices from this hypothetical baseline were then compared to actual, recorded market prices. If the recorded prices were higher than the baseline prices, the difference was attributed to the exercise of market power. This is not proof of anything, since the effort did not include the use of the model to test whether unilateral market power would be successful at all, let alone that it might result in the recorded prices at issue.

Fourth, Market Modeling used to date has failed to distinguish between the exercise of market power and the effect of capacity shortages. In real-world markets, prices spike to their highest levels in shortages. In a true shortage, prices must rise to a level that clears the shortage, and, at that point, will have little to do with the production cost of supplies.³⁰ While, in a shortage, many suppliers may have the ability to affect price, that is the result of the shortage, not a supplier's control of generating capacity. Market Modeling must be able to distinguish between market power and market shortages.³¹

Fifth, the method is criticized because the market modeling presented to date in California has been used as a ratemaking methodology, a task for which it is not intended, nor well-suited. Specifically, these market

28. Harvey, Scott M. & William W. Hogan, *On the Exercise of Market Power Through Strategic Withholding in California*, (Center for Business and Government, Harvard Univ., 2001) available at http://ksghome.harvard.edu/~whogan.cbg/Mkt_Pwr_CA_HH_042401.pdf.

29. Capturing the effect of opportunity cost on bidder behavior is one such complexity. What is meant by opportunity cost is, for example, taking account of the opportunity for a higher price in another market or at another time of year when deciding what price to bid. For more on complexities missed by some market models. *Id.*

30. For example, assume hypothetically there are 100 customers each wanting 1 MWH of electricity at a time when only 90 MWH are available. The price must rise to a level which leads ten customers to drop out of the market. At this point, prices have little to do with the supplier's production costs, and a lot to do with the relative value placed on electricity by consumers.

31. Even simple tests would help distinguish between market power and market shortage. For example, run the market model with 10% more capacity but maintain market shares. If the alleged "market power" dissipates, this may be a shortage, not an exercise of market power.

modelers run their models with all suppliers bidding what is asserted to be their marginal cost.³² The predicted market price, based on hypothetical marginal cost bids, is said to be the justifiable (“just and reasonable”) rate to charge, and refunds are demanded for any prices above this level. This is an inappropriate and dangerous leap from market power analysis to ratemaking. The Commission does not make this leap elsewhere. For example, the Commission does not approve mergers with the condition that the merging utilities be limited to the production costs used for its Delivered Price Test.³³ Market Modeling is not meant to provide the mechanics of price re-regulation.

V. SUPPLY MARGIN ASSESSMENT

In a recent order, the Commission introduced a new quantitative test for judging whether a party has market power for purposes of granting market-based rate authority.³⁴ Heretofore, the Commission used the Hub-and-Spoke Method, but in this order, the Commission proposed to supplant that method with what it termed the Supply Margin Assessment (SMA). The SMA marks two changes from Hub-and-Spoke. First, when tallying potential supply, it takes account of transmission constraints into a market (as does Economic Capacity used in the Delivered Price Test, discussed above). Second, it reflects electricity peak demand in its assessment of market power (the only other method which reflects demand is Market Modeling, also discussed above).

While details are sparse, an illustration shows how the SMA may work. Assume a hypothetical market has ten, equal-sized suppliers, each with 100 MW of capacity; therefore the total supply to that market is 1,000 MW. Assume further that peak demand in that market is 800 MW. With this assumption, the “supply margin” is 200 MW (1,000 MW of supply less the 800 MW peak demand). Since all ten suppliers have less than the supply margin, meaning no one supplier is indispensable to meeting that peak, all ten would be granted market-based rate authority.

The motive for the SMA may be allegations of price “gouging” during the well-publicized California electricity crisis of 2000-2001. This may also explain why the SMA only looks at peak demand. If no supplier is indispensable at peak, then no supplier is in a position to price gouge.

Another motive is reflected in the fact that the SMA would only apply

32. SEVERIN BORENSTEIN ET.AL, DIAGNOSING MARKET POWER IN CALIFORNIA'S RESTRUCTURED WHOLESALE ELECTRICITY MARKET (Nat'l. Bureau of Econ. Research 2000). See also Eric Hildebrandt, Further Analyses of the Exercise and Cost Impacts of Market Power in California Wholesale Energy Market, *San Diego Gas & Electric*, F.E.R.C. Docket No. EL00-95-012 (July 12, 2001).

33. Moreover, all utilities report for each hour of a year what could be the equivalent of the market price produced by these oversimplified market models; utilities file system lambdas which are defined approximately as the marginal cost of the last MWH of electricity used by that utility in that hour. No suggestion has been made that system lambda set a limit on just and reasonable rates for generation by these utilities.

34. *AEP Power Marketing, Inc.*, 97 F.E.R.C. ¶ 61,219 (2001).

to markets outside areas covered by a regional transmission organization (RTO). RTOs are the latest vehicle for assuring open access transmission. In this sense, the Order returns the Commission to its traditional method of promoting open access through rulings on market-based rates. With the SMA, large utilities are likely to fail the market power test in their home territories (control areas) because they control most of the generation therein. If those utilities want the right to sell at unregulated rates, they will have to form or join RTOs.

A significant drawback of the SMA is that it could lead to mistaking a market shortage for market power.³⁵ Think back to the simple example presented above. Keep everything the same on the supply side (ten suppliers each with 100 MW) and change only peak demand, rising to 925 MW from 800 MW. With the increase in demand, all ten suppliers would have their market-based rate authority revoked because the supply margin has been cut to 75 MW and each supplier has 100 MW of capacity, which exceeds the supply margin. With an impending shortage, prices should rise to entice new investment. Price signals should not be blocked at this crucial time. For this reason, if market-based rate authority was revoked in this way, it could be said that the Commission confused the impact of market shortage with that of market power.

The Commission's concern with price gouging in a shortage is appropriate. Price gouging is bad business behavior in any industry. The corner grocer who marks up the price on bottled water when a water main breaks will lose the trust of his or her customers. Similarly, customer trust can be lost in the electricity business. However, as illustrated by the example above, price gouging is not evidence of pervasive antitrust concerns, and should not be addressed in that context. In any event, customers in the electricity business are not defenseless. Indeed, many suppliers are eager to sell protection against price spikes. That protection can come in the simple form of a year-long, fixed-price contract, or it could come in the more sophisticated form of an option agreement that caps prices.³⁶

Also, the introduction of peak demand is not necessary to achieve the Commission's second policy goal. Large utilities will generally be found to have market power in their home territories with only one change from Hub-and-Spoke – taking into account transmission constraints.

Another drawback is that the SMA fails to be true to the definition of market power.³⁷ Recall that the definition of market power speaks of raising prices for a *sustained* period of time. The SMA looks at a single mo-

35. Comments and Request for Intervention of Boston Pacific Company, Inc., F.E.R.C. Docket No. EL01-118-000, at 10 (Dec. 17, 2001). See also Motion to Intervene Out of Time and Request for Rehearing of the Electric Power Supply Association, F.E.R.C. Docket No. ER96-2495-016, at 7-8 (Dec. 19, 2001) [hereinafter Motion to Intervene].

36. For more on risk mitigation, see BOSTON PACIFIC COMPANY, INC., *An Initial Analysis of Recent Wholesale Prices, Price Caps and Their Effect on Competitive Bulk Power Markets* (Electric Power Supply Association: Washington DC, 2000) available at http://www.epsa.org/Documents/Boston_Pacific_Prices_Report_10-11-00.doc.

37. Motion to Intervene, *supra* note 35, at 9.

ment in time – the instant when peak demand is realized – to judge whether market-based rates should be denied all year long. One moment is not a sustained period of time and denying market-based rates on that basis may be an overreaction.

The last disadvantage of the SMA is that it discourages the most efficient option for new capacity – building at an existing site. Again, return to the example above when demand has risen to 925 MW. Consider a proposal by one of the ten existing suppliers to return the market to its 200 MW reserve by building another 125 MW at its existing site. The problem is that, if it did build 125 MW, that supplier alone would not be granted the right to sell at market-based rates; its 225 MW of capacity would exceed the 200 MW capacity reserve that its expansion allowed the market to achieve. The response to this criticism is that the SMA, thereby, would encourage smaller increments of supply by a greater number of suppliers, or better yet, encourage the entry of a completely new supplier. This counter argument has merit, but concern that the SMA may block efficient expansion remains.

VI. CONCLUSION

The Hub-and-Spoke Method has served its policy purpose well because it allowed the Commission to jump-start wholesale competition by promoting open access transmission on a case-by-case basis. In addition, it accommodated new entry in the sense that it made it relatively easy for new competitors to be granted the right to charge market-based prices rather than cost-based regulated rates. There is no compelling policy reason to change it, but the Hub-and-Spoke Method does have analytic shortcomings. If the Commission wants to update its method of measuring market power for judging market-based rate applications, it can readily do so by borrowing the concept of Economic Capacity from the Delivered Price Test. With this update, market shares would be determined using Economic Capacity rather than Installed Capacity.

Economic Capacity is a better replacement for Hub-and-Spoke than the SMA. Using Economic Capacity has the advantage that the same fundamental concepts would be used in the Commission's methods of measuring market power for both mergers and market-based rates. More importantly, Economic Capacity does not confuse market shortage with market power, as does the SMA. Also, because it reflects transmission constraints, Economic Capacity would achieve the same policy goal the Commission pursued by introducing the SMA; that is, large utilities would be found to have market power in their home territories and could be encouraged to form or join effective RTOs.

The Delivered Price Test still serves its policy purpose of making mergers of large, adjacent utilities less likely to be approved without conditions. Still, it has its shortcomings, too, including some potentially perverse results with respect to new entrants. These possible shortcomings with respect to new entry have to be kept in mind and accommodated by the

Commission when the Delivered Price Test is applied.

The allure of Market Modeling is that it has the potential to serve as a direct measure of market power – a method that directly assesses a supplier's ability to profitably raise prices above competitive levels for a sustained period of time. However, today, the state-of-the-art market model may not be sufficiently understood for use on a routine basis. It may be used on mega-merger proposals because of the higher potential impact if a bad decision is made. Market Modeling also could be used to reassess generically (a) the 20% to 30% market share the Commission allows for an applicant seeking market-based rate authority and (b) the HHI thresholds and deltas used by the Commission when determining whether a merger is likely to have any adverse competitive effects.

The real danger with Market Modeling is the tendency by some to use it as a ratemaking methodology or as justification for continued price controls. Measures of market power are meant to tell the Commission if the market is adequately structured to allow price competition. They are not meant as a means for second-guessing the market on a continuing basis. Differences between the prices a market model predicts and the prices actually seen should not be presumed to reflect the abuse of market power when, in truth, the differences could just as well reflect the inability of these models to account for all the factors that affect prices in the real world.

Finally, some perspective should be maintained through all of this. The rightful goal of the Commission is to assure that deregulated markets work to the benefit of consumers. In this regard, too much attention can be paid to market power and too little to market conditions and market rules. Even when we appropriately focus on market power, there is too much attention paid to quantification. The key to making markets work for consumers surely does not lie in finding just the right quantitative measure of market power. Far more important to diffusing any market power concerns are issues like facilitating new entry, creating the means for demand-side response, and broadening the scope of markets — all issues the Commission has and should have high in its priorities.