

ANTITRUST POLICY IN THE NEW ELECTRICITY INDUSTRY

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I. THE OLD REGULATORY AND OPERATING ENVIRONMENT

For over a century, the U.S. electricity industry consisted primarily of over one hundred vertically-integrated investor-owned utilities (IOUs).¹ Each IOU was subject to pervasive cost-of-service regulation by a combination of one or more state public utility commissions (PUCs) and the Federal Energy Regulatory Commission (FERC).² Agencies and courts have applied antitrust principles to IOUs in a variety of contexts for several decades.³ The antitrust analysis of the industry's structure and of the conduct of the participants in the electricity market has been greatly influenced, however, by the existence of pervasive cost-of-service regulation of IOUs and by the widespread belief that large economies of scale left little room for competition to play a beneficial role in governing the electricity market.

Most analysts have long believed that the industry is unduly fragmented and that substantial consolidation of IOUs would enhance the efficiency of the industry's performance.⁴ The industry structure varies greatly by state and region. In some regions, e.g., parts of the Midwest, a single large IOU serves millions of consumers in several states. In other regions, e.g., parts of New England, several tiny IOUs serve portions of a single small state. The regulatory environment has been inhospitable to mergers and acquisitions involving IOUs, however. Such a consolidation requires at a minimum the approval of the Boards of both IOUs, the FERC, and one or more state PUCs. The FERC has encouraged efficiency-enhancing consolidations of IOUs. It has proven difficult for the parties to negotiate terms that would satisfy the disparate interests of the Boards of both IOUs and of state PUCs, however.⁵ Thus, the level of consolidation among IOUs has fallen far short of the level previously predicted by financial analysts and urged by economic analysts. The situation seems to be changing rapidly, however. Thirteen large IOUs proposed consolidations in 1995, and

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1. See PAUL JOSKOW & RICHARD SCHMALENSSEE, *MARKETS FOR POWER* 11-16 (1983).

2. See *id.* The FERC was named the Federal Power Commission until 1977.

3. See, e.g., *Conway Corp. v. FPC*, 426 U.S. 271 (1976); *United States v. Otter Tail Power Co.*, 410 U.S. 366 (1973); *City of Huntinburg v. FPC*, 498 F.2d 778 (D.C. Cir. 1974).

4. See, e.g., JOSKOW & SCHMALENSSEE, *supra* note 1, at 66; Richard Pierce, *A Proposal to Deregulate the Market for Bulk Power*, 72 VA. L. REV. 1183, 1192-97 (1986); STEPHEN BREYER & PAUL MACAVOY, *ENERGY REGULATION BY THE FEDERAL POWER COMMISSION* 91-107 (1974).

5. See Pierce, *supra* note 4, at 1195-96.

rumors abound with respect to scores of other consolidations under consideration by IOUs.⁶

This dramatic change in the prospects for consolidation among IOUs may be attributable to the arrival of a new source of impetus to engage in efficiency-enhancing behavior. All IOUs now believe that they will soon experience the transition from the safe, quiet life of a regulated monopoly to the perilous, volatile life of a participant in a vigorously competitive market. Inefficient firms will not survive that transition. Thus, achieving an efficient size is no longer a discretionary goal that an IOU is free to pursue at its leisure or to decline to pursue at all. Instead, it is one of a dozen or more essential predicates to survival. A desire to enhance efficiency is only one of several plausible motives for the rash of proposed mega-mergers, however. Other less attractive candidates include: (1) a desire to increase a firm's political clout in an effort to provide it increased leverage to negotiate with regulators for a more favorable transition to competition; and (2) a desire to increase a firm's market power in order to earn monopoly profits in the new environment.

Whatever factor or factors account for the sudden increase in proposed utility mergers, the dramatic changes in the electricity market require agencies and courts to take a fresh look at the application of anti-trust law and policy to the electricity industry.⁷ The FERC has the leading role in that process.⁸ It has fulfilled that role in several ways in the past. In the consolidation context, the FERC originally focused its attention on horizontal issues, with particular emphasis on expected cost savings.⁹ Since there was little potential for meaningful competition among IOUs, the FERC approved virtually any proposed consolidation that was accompanied by a claim of expected cost savings.¹⁰

6. See Jeff Bailey, *Electric Utilities in Midwest Plan 3-Way Merger*, WALL ST. J., Nov. 13, 1995, at A2; Benjamin Holden, *Merger of Baltimore G & E, Potomac Electric Planned*, WALL ST. J., Sept. 26, 1995, at A4; Douglas Hawes, *Electric Utility Mergers and Acquisitions Seen in a Larger Perspective*, ELEC. J., Oct. 1995, at 11; James Pierobin, *Merging for Critical Mass*, PUB. UTILS. FORT., Oct. 15, 1995, at 16.

7. See *Midwest Power Sys., Inc. and Iowa-Ill. Gas & Elec. Co.*, 71 F.E.R.C. ¶ 61,386 (1995) (Comm'rs Massey and Hoecker concurring).

8. The FERC must approve a proposed consolidation if it finds that the proposal will be consistent with the public interest. 16 U.S.C. § 824b(a) (1994). The Department of Justice (DOJ) has the power to disapprove a consolidation that the FERC approves. 15 U.S.C. § 18a (1994). So far, the DOJ has chosen not to exercise this power. It is entirely possible, however, that the DOJ will determine that a proposed consolidation that satisfies the FERC's 'public interest' standard is inconsistent with the more rigorous standards in the Clayton Act.

9. See John S. Moot, *The Changing Focus of Electric Utility Merger Proceedings*, 15 ENERGY L.J. 1 (1994).

10. See GEORGE HALL, AMERICAN BAR ASS'N, ANTITRUST POLICY AS REFLECTED IN THE FERC'S REGULATION OF THE ELECTRIC POWER INDUSTRY (forthcoming in REGULATION OF THE ELECTRICITY INDUSTRY); Douglas Green & J.A. Bouknight, Jr., *Electric Utility Antitrust Issues in an Era of Bulk Power Marketing Competition*, NAT. RESOURCES & ENV'T, Winter 1994, at 20; John Williams, *Wheeling & Dealing: FERC's Evolving Approach to Electric Utility Mergers*, ELEC. J., Aug./Sept. 1989, at 16.

The FERC modified its approach to consolidations in the 1980s.¹¹ By then, the FERC had determined that the potential existed for socially-beneficial competition among IOUs with respect to the generation and wholesale of electricity. That potential was not being realized, however, because of vertical constraints on competition. The IOUs were unwilling to allow potential competitors access to their markets. They could preclude competitive access to their sales markets by declining to allow competitors equal access to their transmission lines.¹² In recognition of this new reality, the FERC changed its primary focus to vertical constraints on competition. It would approve a proposed consolidation if, but only if: (1) the consolidation would yield expected cost savings; and (2) the parties to the transaction agreed to provide competitors equal access to their transmission lines.¹³ Since the FERC found that each of the consolidations it considered would produce cost savings, the FERC's new merger policy focused primarily on vertical constraints.¹⁴ The FERC considered horizontal issues, but in ways that were greatly influenced by its preoccupation with vertical issues. Thus, for instance, the FERC often found that a proposed consolidation of IOUs would *decrease* concentration in the wholesale market by increasing the number of firms with access to the relevant market,¹⁵ and it defined the relevant wholesale market primarily with reference to the presence or absence of vertical constraints.¹⁶ This approach made sense at the time. The vertical constraints were formidable obstacles to competition in the generation and wholesale markets, and the FERC had no other effective means of inducing IOUs to eliminate the vertical constraints.¹⁷

II. MAJOR CHANGES DURING THE PERIOD 1992 THROUGH 1995

Between 1992 and 1995, the environment relevant to the application of antitrust principles to the electricity market changed again. The new changes require the FERC to reassess its methods of applying antitrust principles to the industry. None of the approaches the FERC has used in the past are appropriate to the new market conditions. In 1992, Congress enacted the Energy Policy Act (EPAAct).¹⁸ That statute empowers the FERC to require any IOU to provide third parties access to its transmis-

11. See *supra* notes 9-10.

12. See Pierce, *supra* note 4, at 1215-18.

13. See, e.g., *Utah Power & Light Co.*, 45 F.E.R.C. ¶ 61,095 (1988). See also Richard Pierce, *Using the Gas Industry as a Guide to Reconstituting the Electricity Industry*, 13 RES. IN L. & ECON. 7, 32-34 (1991).

14. See *supra* notes 9-10.

15. See, e.g., *Midwest Power Sys., Inc. and Iowa-Ill. Gas & Elec. Co.*, 71 F.E.R.C. ¶ 61,386 (1995); *Entergy Servs., Inc. and Gulf States Utils. Co.*, 62 F.E.R.C. ¶ 61,073 (1993). See generally Hall, *supra* note 10.

16. See *supra* note 15. The FERC defines the relevant market to include all 'first tier' suppliers—i.e., those connected by open access transmission tariffs.

17. See Pierce, *supra* note 13, at 24-40.

18. Energy Policy Act of 1992, Pub. L. No. 102-486, 106 Stat. 2776, 2905 (1992).

sion lines.¹⁹ In 1994, the FERC issued a Notice of Proposed Rulemaking (NOPR) in which it relied on the text of the Federal Power Act of 1935 (FPA) and the spirit of the EPAct as the bases for proposing major changes in the structure, and methods of governing the industry.²⁰ The FERC intends to compel each IOU to file an equal access tariff and to require each IOU to implement functional unbundling, *i.e.*, to separate its transmission, distribution, and generation functions and to perform each function as if it were being performed by a separate firm.

These changes in regulatory environment have two major implications for the FERC's methods of applying antitrust principles to the electricity market. First, for antitrust purposes, the FERC can now ignore the vertical constraints on competition that were the primary focus of the FERC's antitrust activities during the 1980s. As amended by the EPAct, the FPA now gives the FERC regulatory tools that allow it to address those vertical constraints effectively, and the FERC's NOPR evidences its ability and willingness to use those tools to good effect. Second, the FERC needs to refocus its antitrust attention on horizontal market power issues as they arise in the functionally unbundled environment prescribed in its NOPR. The FERC, along with virtually all market participants and analysts, anticipates that each vertically-integrated IOU will be divided into three separate subfirms or operating divisions—a transmission company (transco), a distribution company (disco), and a generation company (genco).²¹ Indeed, many market participants and observers expect functional unbundling to evolve into corporate de-integration—IOWs will spin off their transcos, discos, and gencos into three separate corporations.²² In either case—functional unbundling or corporate de-integration—it no longer makes sense for the FERC to apply antitrust principles as if the relevant product market were provision of bundled electricity service by vertically-integrated firms. Instead, the FERC needs to devise antitrust policies appropriate to the dramatically different characteristics of the separate markets for transmission, distribution, and generation. In the new environment, transmission and distribution will remain regulated monopolies. By contrast, the FERC's goal in implementing the EPAct is to create a fully-competitive wholesale electricity market that will subject gencos to the powerful discipline of a competitive market.

The FERC must apply antitrust principles in at least three different decision-making contexts. First, of course, it must decide whether to

19. See Richard Pierce, *The State of the Transition to Competitive Markets in Natural Gas and Electricity*, 15 ENERGY L.J. 323 (1994); Jeffrey Watkiss & Douglas Smith, *The Energy Policy Act of 1992: A Watershed for Competition in the Wholesale Power Market*, 10 YALE J. ON REG. 447 (1993); Bernard Black & Richard Pierce, *The Choice Between Markets and Central Planning in Regulating the U.S. Electricity Industry*, 93 COLUM. L. REV. 1339 (1993).

20. Notice of Proposed Rulemaking, *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities*, IV F.E.R.C. STATS. & REGS. ¶ 32,514, 60 Fed. 17,662 (1995) (1994) [hereinafter referred to as *NOPR*].

21. *Id.* at 17,664.

22. See Richard Pierce, *The Advantages of De-Integrating the Electricity Industry*, ELEC. J., Nov. 1994, at 16.

approve proposed consolidations of IOUs, beginning with the six major consolidations that have been proposed this year. In all six cases, vertically-integrated IOUs propose to consolidate all of their functions. The FERC has the discretion, however, to authorize only a partial consolidation. In some circumstances, it might find it appropriate to authorize consolidation of the firms' transmission and distribution assets but to refuse to authorize consolidation of their generation assets. Second, the FERC must decide whether a particular geographic market for electricity is sufficiently competitive to justify a decision to allow unregulated wholesales by some or all of the participants in that market.²³ The FERC's goal is to create a fully-competitive unregulated wholesale electricity market in all parts of the country.²⁴ It recognizes, however, that it may not be able to fulfill that goal if, and to the extent that, some geographic markets are unduly concentrated.²⁵ Third, the FERC has the power to condition its approval of a proposed transaction or method of operation on an IOU's willingness to restructure in ways that would render the proposed transaction or method of operation consistent with the "public interest" and the resulting prices "just and reasonable."²⁶ Thus, the FERC may find it appropriate to condition its approval of either a proposed consolidation or a proposal to make wholesales at unregulated prices on an IOU's willingness to divest a portion of its generating assets if the FERC concludes that the relevant wholesale market is, or would be, unduly concentrated in the absence of partial divestiture of generating assets.

In its NOPR, the FERC indicated that it is considering whether, and to what extent, to employ such structural remedies for market power in the wholesale electricity market.²⁷ In some circumstances, other institutions also may have the power to employ structural remedies. A state PUC might condition its approval of a proposed consolidation on divestiture of a portion of the IOU's generating assets even if the FERC approves the transaction without such a condition. Some state PUCs may have broader authority to impose structural remedies in some circumstances. The California Public Utilities Commission (CPUC) has stated that it "almost certainly" will require some California IOUs to divest a portion of their generating assets as part of the CPUC's plan to create a competitive retail electricity market in California.²⁸ Each of these decision-making contexts raises somewhat different considerations, so it may be desirable to apply different antitrust criteria to each, *e.g.*, a geographic market for electricity might not be so concentrated as to justify divestiture or imposition of price controls, yet the same market might be too concentrated to justify approval

23. See, *e.g.*, *Entergy Servs., Inc.*, 58 F.E.R.C. ¶ 61,234 (1992).

24. See generally *NOPR*, *supra* note 20.

25. *NOPR* at 17,674-75.

26. See 16 U.S.C. §§ 824b(b), d, e (1994).

27. *NOPR* at 17,674-75.

28. California Pub. Util. Comm'n, Proposed Policy Decision Adopting a Preferred Industry Structure 7 (1995).

of a proposed consolidation of IOUs absent partial divestiture of generating assets.

III. THE NEW REGULATORY AND OPERATING ENVIRONMENT

Antitrust criteria should be applied to a market in a manner consistent with the expected future characteristics of that market. This principle is problematic in the context of the electricity market, however, because we can be certain of only one characteristic of that market in the near future—it will bear little resemblance to the electricity market of the past. The FERC must predicate its new antitrust policies on some set of expected future market and regulatory conditions, however. For this purpose, the FERC should assume that the electricity market will have the following characteristics within the next few years.

First, the industry will be functionally unbundled, *i.e.*, IOUs will reorganize internally so that the functions of transmission, distribution, and generation are performed by separate units that are required to deal with the other units of the firm as if they are independent firms. This is a central component of the FERC NOPR.²⁹ Its implications for antitrust policy are clear. The FERC should apply different antitrust policies to each of the unbundled markets. It also should consider structural issues on an unbundled basis, *e.g.*, if a proposed consolidation would yield cost savings and no increase in market power with respect to the transmission and distribution functions, but the proposed transaction would yield no significant cost savings and an undesirable increase in market concentration with respect to the generation function, the FERC should condition the approval of the consolidation on the firms' willingness to divest a portion of their generating assets. The FERC should reject the arguments of vertically-integrated IOUs that a proposed consolidation should be approved because an otherwise undesirable increase in the market concentration in the wholesale market will be more than offset by expected cost savings with respect to the transmission and distribution functions. Arguments of that type should be rejected in a functionally unbundled operating environment because they are based on the implicit assumption that vertical integration yields non-trivial benefits attributable to economies of scope and coordination. Functional unbundling undermines that assumption.

Second, the FERC will be successful in implementing a system of equal access to transmission. Again, this is a core component of the FERC's NOPR.³⁰ The FERC is likely to make some mistakes and false starts in accomplishing this daunting task, but the availability of powerful regulatory tools to eliminate vertical constraints on competition has clear implications for the antitrust policies the FERC should adopt. It should ignore all vertical constraints in establishing and implementing its antitrust policies on the assumption that it ultimately will be successful in using its powerful regulatory tools to eliminate those constraints.

29. NOPR at 17,681-82.

30. *Id.* at 17,679-80.

Third, transmission will be subject to pervasive and exclusive regulation by the FERC. Transmission is a classic natural monopoly that is within the FERC's exclusive regulatory jurisdiction. Competition may supplant or supplement regulation of this function at some time, but this can occur only through creation of a secondary market in transmission capacity. It would be futile and counter-productive to attempt to create a competitive transmission market by limiting the degree of concentration in the market. This also has clear implications for the FERC's antitrust policies. The FERC should approve, indeed it should encourage, maximum consolidation of transmission assets in each region. All such transactions are likely to yield substantial gains in efficiency, and none can harm competition.

Fourth, distribution will be subject to pervasive and exclusive regulation by state PUCs. Like transmission, distribution remains a classic natural monopoly. A state can create a competitive retail electricity market by requiring discos to provide equal access to their distribution systems, but the potential for retail competition is unaffected by the pattern of ownership of distribution assets. Thus, a proposed consolidation of discos raises no concerns with respect to potential creation or increase of market power by any seller.

The only competitive concern that might be raised by such a proposal is its potential adverse effect on monopsony power. A particular proposal might raise non-trivial monopsony concerns if it would have the effect of creating a highly concentrated wholesale market on the buyer's side.³¹ Three factors complicate the FERC's efforts to devise an appropriate set of antitrust policies applicable to proposed consolidations of discos. First, it will experience difficulty determining the geographic scope of the relevant market. I will discuss this problem in detail in Section IV A. Second, it is difficult to verify, refute, or quantify claimed cost savings attributable to a proposed consolidation of large discos. We know little about the extent of the economies of scale potentially available in performing the distribution function. We can conclude with confidence that the consolidation of two small discos would enhance efficiency, but we do not know whether the potentially available economies of scale continue beyond a size equivalent to ten, twenty, fifty, or even ninety percent of a wholesale market. Third, state PUCs have discretion to adopt regulatory policies that can eliminate the only potential source of antitrust concern raised by a proposed consolidation of discos. If state PUCs require discos to provide equal access to all consumers, or even to a class of consumers that accounts for a high proportion of total electricity consumption in the relevant market, the concern with respect to potential disco monopsony power disappears.

Given the high degree of uncertainty with respect to the variables that should shape the FERC's policies with respect to the appropriate structure of the distribution sector, and the power of states to affect those variables, the FERC should accord near dispositive deference to the positions of states on proposed consolidations (or divestitures) of discos in the new

31. See IV PHILLIP AREEDA & DONALD TURNER, ANTITRUST LAW §§ 963-65 (1992).

unbundled environment. The FERC cannot approve a proposed consolidation of discos over the opposition of a state PUC in any event. If functional unbundling evolves into corporate de-integration, the FERC may also lack the jurisdictional power to disapprove a consolidation that is approved by the PUCs of the affected states. Even if it retains that power, the FERC should defer to PUCs in exercising that power. It should approve any proposed disco consolidation that is supported by the PUCs of the affected states.

Fifth, the FERC will continue its efforts to substitute competition for regulation as the primary means of governing the wholesale electricity market. This assumption seems safe. The FERC has pursued policies designed to displace regulation with competition to the maximum extent possible in all contexts for over a decade.³² Enactment of the EPAct of 1992, and issuance of the 1994 NOPR eliminate any remaining doubts about the FERC's continuing pursuit of this policy agenda. The broad antitrust implications of this element of the new environment are clear. The FERC must analyze with care the present structure of the generating sector. It must develop a comprehensive set of antitrust policies applicable to proposed consolidations of gencos and to the other decision-making contexts to which structural issues are relevant, *e.g.*, proposals to make wholesales at unregulated (or lightly regulated) prices and proposals to require partial divestiture of generating assets. I will discuss this difficult task in the remaining sections of this paper.

Sixth, the FERC will devise and implement an efficient method of pricing transmission services. This assumption is predicated on a more fragile foundation than the first five assumptions. The present state of transmission pricing is confused and inefficient. Many transactions are governed by complicated agreements among large numbers of IOUs in which a substantial portion of the consideration for the service consists of implicit barter, *e.g.*, utility A provides services for utilities B through J in return for those utilities' provision of services for utility A.³³ To the extent that transmission service is provided in return for a purely monetized price, the most frequent pricing approach relies on "postage stamp rates," *i.e.*, the IOU charges the same price per unit of service provided without regard to differences in distance or costs.³⁴ The FERC has encouraged IOUs to switch to a methodology called "or" pricing, in which the unit price of transmission service is determined with reference to the IOU's average fully allocated embedded cost if the service can be provided without expanding the existing transmission capacity, "or," with reference to opportunity cost, if transmission capacity constraints create a situation in which provision of service to one party would displace service to another

32. See generally Pierce, *supra* note 19.

33. See JOSKOW & SCHMALENSEE, *supra* note 1, at 71-77.

34. Policy Statement, Inquiry Concerning the Commission's Pricing Policy for Transmission Services Provided by Public Utilities Under the Federal Power Act, 59 Fed. Reg. 55,031 (1994) [hereinafter *Transmission Pricing Policy Statement*].

party.³⁵ The FERC's "or" methodology would be a major improvement over the status quo ante—barter and postage stamp rates—if the FERC can devise a practicable way of implementing its preferred methodology. So far, however, the FERC has not been able to overcome the formidable obstacles to implementing opportunity cost pricing on a dynamic and complicated transmission grid.

Notwithstanding the large gap that exists between the present methods of pricing transmission service and an efficient pricing policy, I will analyze the antitrust issues on the assumption that the FERC will adopt and implement a more efficient transmission pricing policy in the near future. I indulge this assumption for five reasons. First, the FERC is striving to attain that goal.³⁶ Second, the goal is attainable. Third, many market participants share the FERC's interests in attaining that goal. Fourth, the goal must be attained, since continuation of the present pricing methods would produce a variety of serious adverse effects in the new unbundled environment.³⁷ Fifth, it is impossible to make a rational determination of the geographic scope of a wholesale electricity market consistent with the alternative assumption, *i.e.*, that the present inefficient pricing methods will persist in an unbundled environment. Determining the geographic scope of a market is a critical step in determining whether any particular market structure is likely to have adverse effects on consumer welfare. Yet, determining the geographic scope of a wholesale electricity market is critically dependent on adoption of a more efficient transmission pricing policy.

An efficient transmission pricing regime should include several features. First, it should be a two-part rate, or it should have characteristics analogous to such a rate. The first part should be designed primarily to allow a transco to recover its investment in transmission assets. This part should be billed on some basis other than per unit of service provided in order to minimize its potential distortive effect on decisions whether to purchase a unit of transmission service. Devising and implementing the first part of the rate is a daunting task that requires the FERC to choose among imperfect alternatives.³⁸ The second part of the rate should be billed per unit of service provided. It should be calculated solely with reference to the short-term marginal cost of providing a unit of transmission service. That marginal cost has two components: variable out-of-pocket costs and opportunity costs. The variable out-of-pocket costs consist primarily of line loss, *i.e.*, the value of the electricity lost in the process of transmitting a unit of electricity over a particular route. This varies primarily as a function of the distance transmitted and the characteristics of the relevant transmission lines, *e.g.*, a 765 KV line experiences less line loss

35. See *Northeast Utils. Serv. Co.*, 58 F.E.R.C. ¶ 61,070 (1992).

36. See generally *Transmission Pricing Policy Statement*, *supra* note 34.

37. See *Pierce*, *supra* note 13, at 40-47.

38. See RICHARD PIERCE, *ECONOMIC REGULATION* 142-55 (1994). See generally FEDERAL ENERGY REGULATORY COMM'N, *THE TRANSMISSION TASK FORCE'S REPORT TO THE COMMISSION* (1989); Charles Stalon, *The Significance of the FERC's Transmission Task Force Report in the Evolution of the Electric Industry*, 13 J. RES. IN L. & ECON. 105 (1991); KEVIN KELLEY ET AL., *SOME ECONOMIC PRINCIPLES FOR PRICING WHEELED POWER* (1987).

than a 230 KV line. The line loss per mile on a modern, ultra high voltage line is very small. Thus, if line loss were the only component of the marginal cost of transmission, the FERC could conclude with confidence that U.S. wholesale electricity markets are very large. The relevant market would have a radius of at least five hundred miles. Indeed, in this situation, the relevant market might consist of the entire continent of North America.

The marginal cost of transmission also should include opportunity costs, however.³⁹ If a transmission line (or path) is capacity-constrained at a particular time, the opportunity cost of transmitting an additional unit of electricity to accommodate one wholesale transaction consists of the cost of foregoing the transmission of other units of electricity associated with different wholesale transactions, *i.e.*, the output of some generators must be reduced to permit the transmission of electricity produced by another generator.⁴⁰ In this situation, the opportunity cost of transmitting a unit of electricity is the cost of substituting units of higher cost electricity for units of lower cost electricity. Since the marginal cost of generating electricity ranges from eight dollars per megawatt hour (MWH) to 155 dollars per MWH,⁴¹ this opportunity cost can be very large. In conditions of constrained capacity, the opportunity cost of transmission, often referred to as the congestion cost, usually dwarfs the variable out-of-pocket costs of transmission. The existence of transmission capacity constraints at some locations during some periods of time, and the existence of the associated congestion costs, greatly complicates the FERC's task of devising and implementing antitrust policies appropriate to the wholesale electricity market. Transmission capacity constraints and congestion costs reduce to some uncertain extent the geographic scope of the wholesale market relevant to a particular proposed transaction.

Seventh, the FERC will implement its pro-competitive regulatory agenda through adoption of the "Poolco" model. This assumption is controversial and contestable. The participants in the ongoing debate about the preferred future of the electricity market are about evenly divided between the proponents of the Poolco model and the proponents of a bilateral trade model. This is not the place to rehearse that complicated debate.⁴² I will attempt only a brief, simplified summary for the benefit of

39. See Pierce, *supra* note 13, at 40-47. I am excluding from this discussion what the FERC refers to as "ancillary services." This generic label includes several distinct services, *e.g.*, dispatch, load following, and reactive power. Each of these services must be analyzed carefully and subjected to an appropriate governance regime. Some services can be provided through competitive market mechanisms, while others should be provided by regulated entities, either owners of transmission lines or Poolco.

40. See William Hogan, *Electric Transmission: A New Model for Old Principles*, ELEC. J., Mar. 1993, at 18.

41. See William Hogan, Poolco: What's the Trick? 13 (July 18, 1995) (paper presented at the Electric Generation Ass'n Summer Meeting).

42. For a sample of the debate, compare Donald Garber et al., *An Efficient Electricity Market Using a Pool to Support Real Competition*, ELEC. J., Sept. 1994, at 48; with California Pub. Util. Comm'n, *Customer Choice Through Direct Access: Proposal and Recommendations of Commissioner Jessie J. Knight, Jr.* (May 24, 1995).

those who have chosen not to immerse themselves in the details of this important debate.

Both groups recognize that each regional transmission grid must be subject to operational control by a single entity, often called the independent system operator (ISO). Both also recognize that transmission grids are complicated, interactive, and dynamic. If the grid is characterized by non-trivial capacity constraints, the addition of a load or a source at one point on the grid can impose large costs on numerous third parties by reducing the capacity available on other portions of the grid, thereby forcing curtailment of the output of one or more generators. Both groups agree that the method of organizing wholesale trade in electricity must account for these complicated relationships.

Proponents of a bilateral trade model believe that it can perform this function if the contracts between generators and purchasers are well-drafted, and if the FERC implements an efficient system of transmission pricing that incorporates congestion costs. Some combination of arbitrage and multi-party contracts might yield acceptable results in this situation. If a bilateral contract purported to require a particular generator to sell electricity to a particular purchaser in circumstances in which the associated transmission would require curtailment of a lower cost generator, the transaction would not actually take place because of the high cost of the associated transmission service. If the generator under contract had to bear the high transmission cost, it would have an economic incentive to purchase electricity from another generator with an uncongested transmission path to the buyer, and to substitute that electricity for its own to meet its contractual obligations. If the buyer under the contract had to bear the high transmission cost, it also would have an incentive to substitute electricity from a generator with an uncongested transmission path, and to use a portion of its saved transmission costs to compensate the generator under contract for its lost profits on the sale. The proponents of bilateral trade believe that arbitrage and multi-party contracts of this type would avoid the adverse effects of the complicated interactions within a transmission grid.

Proponents of Poolco are skeptical of this belief on at least two grounds. First, they believe that the FERC would not be able to implement an efficient transmission pricing policy in a bilateral trade environment. Second, they believe that arbitrage and multi-party contracts would not be sufficient to avoid the high social costs attendant to the network effects that exist on a capacity-constrained transmission grid. Both sources of skepticism have the same root. The nature, location, and magnitude of the network effects on a capacity-constrained grid are complicated, non-linear, and dynamic. They could be accommodated only by some combination of extremely complicated contracts, *e.g.*, a contract with ten parties and scores of contingencies, and/or hundreds of arbitrage transactions each day. Moreover, the FERC would have to implement an extremely complicated and dynamic transmission pricing policy in which the cost of transmission on many paths would vary within a large range continuously throughout

each day. The proponents of Poolco doubt that the FERC would be able to implement such a system in the context of a bilateral trade market.

The Poolco proponents have designed their alternative method of moving to a competitive wholesale market on the basis of the systems that are already in effect in many other places, *e.g.*, Great Britain, Norway, Alberta, New Zealand, Argentina, and Chile, and the power pools that many U.S. IOUs have long used to reduce the cost of electricity in a region.⁴³ Poolco refers to a new independent institution that would have two complementary roles: daily operation of a regional transmission grid and implementation of a bidding system that would determine which generators provide power to the grid at what prices at each point in time. Poolco would use existing algorithms that reflect the characteristics of the grid, including the capacity constraints and network interactions that exist in varying generation and load conditions, to implement a dual bidding system. Each half hour, each purchaser would submit a bid that consists of the quantity of electricity it is willing to purchase at each node on the grid at various prices, and each generator would submit a bid that consists of the quantity of electricity it is willing to sell at each node at various prices. Poolco would then input the bids and run the algorithm. The output would include the quantity of electricity that flows in and out of the grid at each node during that half hour, the price paid and received at each node, and the per unit cost of transmission on each path. Thus, Poolco would automatically implement an efficient transmission pricing policy. The marginal cost of transmission from one node to any other node would be the difference between the time-specific prices of electricity at the two nodes. The Antitrust Division of the Department of Justice (DOJ) has aptly analogized Poolco's role to that of a stock exchange.⁴⁴ The FERC would have to regulate Poolco, since it would be a classic natural monopoly that dispatches electricity in interstate commerce. That task would be relatively easy, however, since both the Poolco algorithm and its transaction records would be highly transparent. Poolco would be unlikely to abuse its monopoly power because any such abuse would be easy for transacting parties or the FERC to detect.

In my analysis of antitrust issues, I will assume that the FERC adopts the Poolco model as the basic mechanism to create a competitive electricity market. This assumption has several effects on the analysis, but the net effect is only to reduce the potential for abuse of market power. The potential for gencos to exercise market power exists under either model, but the Poolco model has features that reduce the potential for undetected abuse of market power to some uncertain extent.⁴⁵ Thus, adoption of the alternative assumption—that the FERC chooses a bilateral trade method

43. See generally Hugh Rudnick et al., *Evaluation of Alternatives for Power System Coordination and Pooling in a Competitive Environment*, IEEE Transactions on Power Systems (1995).

44. See generally ANTITRUST DIV., U.S. DEPT. OF JUSTICE, COMMENTS IN RESPONSE TO THE FERC NOPR (1995).

45. See *infra* notes 81-86.

of implementation—would not materially affect the results of my antitrust analysis.

IV. ANTITRUST POLICIES APPLICABLE TO GENCOS

In the new functionally unbundled environment, the wholesale electricity market will share the basic features of any other competitive market. Thus, the starting point for devising policies to govern the permissible structure of the genco segment of the industry should be the DOJ Merger Guidelines.⁴⁶ The Guidelines use the Herfindahl-Hirschman Index (HHI) to identify proposed consolidations that raise potential anticompetitive concerns sufficient to justify detailed analysis of the likely effects of the proposed transaction. The HHI is calculated by summing the squares of the market shares of the participants in the relevant market. A consolidation that would increase the HHI in the relevant market by fifty points triggers antitrust scrutiny if the pre-existing HHI exceeds 1800, while a consolidation that would increase the HHI by 100 points triggers scrutiny if the pre-existing HHI is between 1000 and 1800. The Guidelines suggest that a high proportion of proposed consolidations of gencos might well warrant serious antitrust scrutiny. Indeed, the Guidelines suggest the distinct possibility that the present pattern of ownership of generating assets should be a subject of serious antitrust concern. If the relevant geographic market is each state, or that portion of a state that is served by one of the ten regional transmission grids, ninety-one percent of U.S. electricity markets have HHIs in excess of 2500, and scores of markets have HHIs in excess of 5000.⁴⁷

Studies of the electricity markets in Great Britain and Sweden reinforce the belief that market concentration among gencos is a subject worthy of serious concern. The British genco sector has an HHI of approximately 3460.⁴⁸ Numerous studies of the British market have produced evidence of abuse of market power by gencos.⁴⁹ Richard Green and David Newbery estimated that prices were approximately seventy-nine percent higher, and that output was approximately thirteen percent lower, than would be the case if the genco sector were structurally competitive.⁵⁰ Green and Newbery predicted that the abuse of market power by the British gencos would decline dramatically if the genco sector were restructured to consist of five equally-sized firms, yielding an HHI of 2000. Such a structure would produce an average price only seventeen percent higher, and

46. See 57 Fed. Reg. 41,552 (1992).

47. William Hogan, Background for Plenary Session on Market Power, in WORKING PAPERS OF THE HARVARD ELECTRICITY POLICY GROUP 5-6 (1995).

48. See Stephen Littlechild, *Competition in Progress*, PUB. UTILS. FORT., Nov. 15, 1994, at 26.

49. See *id.* See also Alex Henney, *The Mega-NOPR: A Brit Crosses the Pond to Explain What's Happening at FERC*, PUB. UTILS. FORT., July 1, 1995, at 29. See generally *U.K.'s National Power, Powergen Must Sell Off Up to 6000 MW, Lower Rates*, ELEC. UTIL. WK., Feb. 21, 1994; Richard Green, *Britain's Unregulated Electricity Pool*, in FROM REGULATION TO COMPETITION (M. Einhorn ed., 1994); Richard Green & David Newbery, *Competition in the British Electricity Spot Market*, 100 J. POL. ECON. 929 (1992).

50. Green & Newbery, *supra* note 49, at 943-46.

output only three percent lower, than the results of a hypothetical fully-competitive market.⁵¹

Studies of the British market have also detected another phenomenon that should be of concern to U.S. policy makers. Some portions of the British grid are capacity-constrained during some load conditions. At those times and locations, the price bid and received is far above the price that would be produced by a competitive market.⁵² This finding demonstrates that the effects of capacity constraints can include creation of local genco monopolies, with very large resulting reductions in consumer welfare.

Studies of the Swedish market have produced similar estimates and predictions. The Swedish market has an HHI of 3200.⁵³ Lars Bergman and Bo Andersson estimated that the level of market concentration is such that the market price in Sweden would be thirty-six percent higher and the output would be nineteen percent lower than the results produced by a hypothetical, structurally-competitive market.⁵⁴ Bergman and Andersson also estimated that modest restructuring—increasing the number of gencos from four to six—would virtually eliminate the adverse effects of potential exercise of market power by Swedish gencos.⁵⁵ On the basis of these studies, and scores of studies of other markets, Paul Joskow has developed a few simple rules of thumb with respect to criteria applicable to concentration levels in the U.S. electricity market: two gencos are too few; ten are ample; five are probably sufficient; and, four equally-sized firms represents the presumptive balance point.⁵⁶

These guidelines and studies provide a useful starting point for an anti-trust analysis of the electricity market, but they are not sufficient alone to form the basis for a detailed set of policies that can be implemented for that market. That task is complicated by three factors. First, it will be difficult to determine the scope of the geographic market relevant to a proposed consolidation. The major determinative variables are the existence, location, extent, and effects of capacity constraints on transmission grids. In the absence of capacity constraints, it might be defensible to divide the U.S. into two geographic markets; east and west of the intertie that connects the two halves of the national grid. If those were the relevant markets, the present structure of the market, with an HHI well under 1000, would provide no reason for concern, and the FERC could approve all of the consolidations that have been proposed to date and a great many others without having to engage in close scrutiny of the likely antitrust effects of the consolidations. At the other extreme, if capacity constraints

51. Green & Newbery, *supra* note 49, at 947.

52. Green & Newbery, *supra* note 49, at 951.

53. See generally LARS BERGMAN & BO ANDERSSON, STOCKHOLM SCH. OF ECON., MARKET STRUCTURE AND THE PRICE OF ELECTRICITY: AN EX ANTE ANALYSIS OF THE DEREGULATED SWEDISH ELECTRICITY MARKET (1994).

54. *Id.* at 9.

55. *Id.* at 11.

56. See generally Paul Joskow, *Market Power: Friend or Foe?*, in WORKING PAPERS OF THE HARVARD ELECTRICITY POLICY GROUP (1995).

limit the scope of geographic markets to each state or each portion of a state that is served by a particular regional grid, almost all U.S. electricity markets are already characterized by a degree of concentration that is likely to yield bad results, and the FERC should disapprove virtually all proposed genco consolidations except those between two tiny gencos. If, as seems likely, the relevant geographic markets are larger than a state and smaller than half the nation, the FERC must adopt a detailed set of policies that will allow it to distinguish among transactions and markets. In any event, it is impossible to apply any set of policies without first deciding how to determine the relevant geographic market and hence the degree of concentration in each market. I will return to this complicating factor in section A.

The second complicating factor is the existence of unique institutional features of the new electricity market. Antitrust analysts view measures of market concentration as no more than presumptive indicators that a particular market structure or proposed consolidation is, or is not, worthy of detailed analysis. There are myriad other factors that can appropriately induce an agency to conclude either that a different set of guidelines and thresholds for scrutiny should apply to a particular type of market, or that a proposed consolidation should be approved even though it poses a risk of creating a degree of market power that would be considered unacceptable in other circumstances. This is the point at which the assumed adoption of the Poolco model becomes relevant to the analysis. The factors that should be considered in a detailed analysis of the permissible or desirable structure of a market include: ease of entry, existence of excess capacity, proportion of costs that are fixed, degree of homogeneity of product, structure of the buyer side of the market, extent of sellers' knowledge of each other's costs and prices, degree of transparency of any exercise of market power, and, most importantly, extent of potentially available economies of scale.⁵⁷ The last four of these factors are affected to some uncertain extent by the assumption that the FERC will adopt the Poolco model. I will address each of these considerations in sections B and C.

The third complicating factor is lack of relevant historical experience. The manner in which a market has evolved, and the manner in which a market has performed in the past, are valuable sources of data for an antitrust analysis of the market. Most of the variables relevant to establishing antitrust policies applicable to a market are difficult to estimate.⁵⁸ Historical data can be very helpful in verifying or refuting a preliminary estimate of an important variable.⁵⁹ Two examples illustrate this phenomenon. First, an analyst might conclude preliminarily that the relevant geographic market probably is small area X, in which case the HHI is 3200, indicative

57. See IIA PHILLIP, AREEDA ET AL., *ANTITRUST LAW*, §§ 404, 408, 420-22 (1995); AREEDA & TURNER, *supra* note 31, at §§ 916-23, 939-62; PHILLIP AREEDA & HERBERT HOVENKAMP, *SUPPLEMENT TO ANTITRUST LAW*, §§ 917-20, 939-40 (1994).

58. See AREEDA ET AL., *supra* note 57, at §§ 530d, 531a; AREEDA & TURNER, *supra* note 31, at §§ 921, 923; AREEDA & HOVENKAMP, *supra* note 57, at § 921.

59. See AREEDA ET AL., *supra* note 57, at §§ 422d, 515-25, 550, 552d.

of a highly concentrated market. In many circumstances, however, it is difficult for the analyst to be confident that she is right. If a retrospective study of the market's performance produces a finding that prices have approximated marginal cost, the analyst has good reason to believe that her preliminary determination of the geographic scope of the market is wrong. On reconsideration, in light of the historical performance of the market, the analyst may conclude that the relevant geographic market probably is large area 4X, in which case the HHI is 768, indicative of an unconcentrated market. Second, an analyst might conclude preliminarily that a market is characterized by low economies of scale. Again, however, the analyst cannot be confident that she is right. If a retrospective study of the market's performance indicates that many small firms have become unprofitable and have gone out of business, while large firms have grown and become more prosperous, the analyst has reason to believe that her preliminary determination was wrong. On reconsideration, she may conclude that economies of scale are much larger than she previously believed and, hence, that we should tolerate a relatively concentrated market in order to take advantage of the available economies of scale.

The problem is that we have no historical experience with a competitive electricity market in the U.S. This has major implications for devising antitrust policies appropriate for the new market. For instance, we cannot draw meaningful inferences from the fact that many of the most successful gencos are large because they did not reach their present size as participants in a competitive market. The size and profitability of a franchised monopolist has no necessary relationship to the firm's efficiency.⁶⁰ Some of the largest, most prosperous IOUs are also among the least efficient.⁶¹ Similarly, we have no record of performance of a fully competitive wholesale electricity market that will help us draw inferences with respect to the geographic scope of the new markets.

A. *Determining the Geographic Scope of an Electricity Market*

Transmission capacity constraints limit the geographic scope of many U.S. electricity markets at some locations and at some times. Bill Hogan has documented the existence and the powerful effects of capacity constraints in many locations.⁶² The FERC has not previously considered the effects of capacity constraints on the scope of the geographic market relevant to a proposed consolidation of gencos. That policy may have been defensible in the prior regulatory environment, but it is no longer defensible in the new environment. The FERC confronts four major problems, however, in its efforts to determine the geographic scope of U.S. electricity markets: (1) inadequate data with respect to the locations of constraints;

60. See Charles Studness, *Estimating the Financial Cost of Utility Regulation*, PUB. UTILS. FORT., Nov. 1, 1993, at 48; Charles Studness, *Regulation and Local Rate Differences*, PUB. UTILS. FORT., Aug. 15, 1992, at 28.

61. See *id.*

62. See, e.g., William Hogan, *Electricity Transmission and Emerging Competition*, PUB. UTILS. FORT., July 1, 1995, at 24.

(2) inadequate data with respect to the scope and effects of constraints; (3) the practical inability to store electricity; and (4) uncertainty with respect to the likelihood that present constraints will dissipate in the near future or, conversely, that new constraints will evolve in the near future.

The roots of these problems lie in the principles of physical law that govern the flow of electricity in an interconnected grid. The capacity of a transmission line, or more accurately of a transmission path, from point A to point B can vary dramatically, depending on the combination of generators and loads that are on the grid at a particular point in time. Bill Hogan has illustrated this phenomenon in several specific contexts.⁶³ In Southern California, for instance, two transmission paths have maximum capacities of 5700 MW and 16,974 MW, respectively, but their capacities are interrelated in complicated ways. If the first path is operating at its maximum capacity of 5700, the capacity of the second path is reduced by fifty percent, from 16,976 to approximately 8400. If the second path is operating at maximum capacity, the capacity of the first path is reduced dramatically—from 5700 to 700.

These capacity constraints have three dimensions—geographic, temporal, and quantitative. In most operating conditions, *e.g.*, ninety percent of the time, a grid may be unconstrained over a particular path, but that path may be severely constrained ten percent of the time. In the context of markets for most goods, an antitrust analyst could safely ignore the existence of temporary transportation capacity constraints. If transportation constraints preclude movement of refrigerators into Detroit ten percent of the time, for instance, the constraints would have no effect on the geographic scope of the refrigerator market. Refrigerator dealers in Detroit would simply maintain an inventory of refrigerators in Detroit sufficient to meet demand during the periods covered by any short-term transportation capacity constraints. Thus, temporary transportation capacity constraints are worthy of serious consideration only with respect to their potential effects on markets for perishable commodities, *e.g.*, if peaches last for only one week after they are harvested, a one-week constraint on the number of peaches that can be transported into a particular area during the peach harvesting season may properly induce an analyst to conclude that the geographic market for peaches consists only of that area.

Electricity is the ultimate perishable commodity. It cannot be economically stored for even a minute. Thus, at least arguably, even short-term capacity constraints across transmission paths should induce the FERC to conclude that the constraints constitute boundaries of the relevant geographic markets for wholesale electricity. To complicate the analysis further, some capacity constraints are effective twenty or thirty percent of the time, rather than a mere ten percent of the time.

An analyst also could defend a decision to ignore a transportation capacity constraint if she has reason to believe that capacity is likely to be expanded to eliminate the constraint in the near future. The natural gas

63. *Id.*

market illustrates this point particularly well. During the period 1985 through 1992, the FERC implemented a series of reforms of the gas market that are broadly analogous to the electricity reforms it is now implementing, e.g., equal access to transmission lines combined with functional unbundling of transmission, distribution, and wholesales.⁶⁴ Initially, these reforms produced numerous local and regional wholesale gas markets because gas transportation constraints limited the scope of geographic arbitrage. In just a few years, however, the wholesale gas market evolved into two large markets—the eastern and western halves of North America, within which a single, national market in which geographic arbitrage precludes any seller from exercising market power in any local or regional market.⁶⁵ It would be nice if the FERC could safely assume that the electricity market will evolve in a similar manner. The relevant market would then be one-half of the continental United States (or even North America), and the FERC could ignore as implausible any potential concern about the present or future structure of the genco market.

There are three reasons, however, for skepticism with respect to any assumption that the electricity market will evolve in the same manner as the gas market.⁶⁶ First, gas can be economically stored. Major changes in the patterns of ownership, location, and operation of gas storage facilities have reduced significantly the potential for temporary gas transportation constraints to limit the geographic scope of the gas market. By contrast, electricity simply cannot be stored economically.

Second, the private incentives to install new pipeline capacity to reduce constraints are strong and straight-forward. If the pre-existing capacity into an area is effectively constrained, both incumbent owners of capacity and potential new entrants confront a strong economic incentive to install new capacity. The party who installs needed capacity can realistically expect to earn a competitive return on its investment. By contrast, the incentives of private parties to invest in needed expansions of an electricity grid are extraordinarily complicated.⁶⁷ No single firm is likely to have a sufficient economic incentive to invest in a socially beneficial expansion of the grid. All participants in grid transactions are potentially affected by any potential expansion. Each is affected to a different extent and sometimes even in different directions. Some parties are harmed by some grid expansions. In this environment, we can be confident that socially beneficial grid expansions will be proposed only if all participants

64. See generally Pierce, *supra* note 19; Richard Pierce, *Reconstituting the Natural Gas Market from Wellhead to Burnertip*, 9 ENERGY L.J. 1 (1988).

65. See generally Robert Michaels & Arthur DeVany, *Market-Based Rates for Interstate Pipelines: The Relevant Market and the Real Market*, 16 ENERGY L.J. 299 (1995). See also *Canada Gas Market Mimics U.S. In East-West Price Difference*, NAT. GAS WK., Jan. 15, 1996, at 10; *NEB Calls Gas-Price Split Not North-South, but East-West*, NAT. GAS. WK., Jan. 8, 1996, at 1.

66. See, e.g., John Herbert, *Improving Competitive Position with Natural Gas Storage*, PUB. UTILS. FORT., Oct. 15, 1995, at 34; *Storage Benefits from Technology, Competition*, NAT. GAS WK., Apr. 18, 1994, at 6.

67. See William Hogan, *Electricity Transmission Policy and Promoting Wholesale Competition* 110-13 (Aug. 7, 1995) (unpublished manuscript, on file with the author).

in grid transactions agree to form a coalition to support each grid expansion. A socially beneficial grid expansion is unlikely to be proposed unless a high proportion, perhaps even all, of the scores of grid participants reach agreement.⁶⁸ This type of decision-making environment creates a high potential for collective action problems that can preclude many socially beneficial capacity expansions from reaching the stage of a viable proposal.⁶⁹

Third, the regulatory barriers to pipeline capacity expansions are low. The FERC has exclusive authority to approve or disapprove a proposed expansion project. Most proposals elicit no opposition, and the FERC almost invariably approves the rare contested projects expeditiously. The FERC approved hundreds of pipeline capacity expansion projects between 1985 and 1992.⁷⁰ By contrast, the regulatory barriers to grid expansions are formidable.⁷¹ Any project must be approved by all affected states; many also must be approved by all affected units of local government. Virtually all projects are opposed vigorously. Many socially beneficial expansions are never approved; others are approved only after many years of costly regulatory delay. Thus, the FERC cannot afford to indulge the assumption that the present capacity constraints will dissipate over time. Instead, changes in the patterns of generators and loads spawned by the dramatic changes in the electricity industry's operating environment are likely to create new capacity constraints.

In this situation, the FERC should adopt a merger policy in which it resolves uncertainties with respect to the geographic scope of the relevant market in favor of the smallest plausible market. Such a policy may well yield disapproval of some genco consolidations that would be socially beneficial. That is a risk worth taking, however, given both the present level of uncertainty with respect to the magnitude and effects of transmission constraints, and the likelihood that this uncertainty will diminish significantly over time. After a few years of experience with competitive wholesale markets, the FERC will have access to data that will allow it to determine with confidence the magnitude, and significance of all capacity constraints. The record of prices at each node on the grid for each half-hour will provide the FERC with all the data required to determine the geographic scope of each market. If that data demonstrates that the market relevant to a proposed genco consolidation is larger than the FERC originally estimated, the FERC can reconsider its prior decision declining to approve the consolidation in light of the new data. By contrast, if the FERC were to approve a consolidation based on its belief that the relevant market is large, and the data produced by the actual performance of wholesale mar-

68. *See id.*

69. *See generally* MANCUR OLSON, *THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS* (1971).

70. *See Factors Affecting the Time it Takes to Approve Construction of Natural Gas Pipelines: Hearings on Before the Subcomm. Env't, Energy, and Natural Resources of the Senate Comm. on Government Operations*, 102d Cong., 1st Sess. 7 (1991) (testimony of Victor Rezendes, GAO).

71. *See Pierce, supra* note 19, at 333-35.

kets demonstrates that the relevant market is smaller, the FERC would confront major problems in any attempt to eliminate the adverse affects of its prior order approving the consolidation.

It does not follow that the FERC (or state PUCs) should resolve all doubts in favor of the smallest plausible market for other antitrust purposes, *e.g.*, in deciding whether to order partial divestiture of generating assets or in deciding whether to allow a genco to make sales at unregulated prices. For those purposes, an erroneous determination that a market is larger than it turns out to be is less costly. The FERC can induce partial divestiture or reimpose price controls if it later determines that it overestimated the geographic scope of the relevant market.

Of course, Congress could render the FERC's task much easier, eliminate virtually all concerns about the structure of the wholesale electricity market, and ensure the creation of a fully-competitive national wholesale market simply by amending the Federal Power Act to create a jurisdictional environment identical to that created by the Natural Gas Act. If the FERC had exclusive jurisdiction to approve grid expansion proposals, the FERC could safely assume that it would approve all socially beneficial proposals and that a national electricity market would evolve within a few years. Once the competitive wholesale markets begin to produce data that document the high social costs of transmission capacity constraints, Congress may develop the will to take this step. Until that time, however, the FERC must apply antitrust policies that are based on the assumption that high regulatory barriers will preclude many socially beneficial grid expansions.

B. Beyond the Threshold Issue

Determining the geographic scope of the relevant market is a necessary but insufficient condition for devising and implementing antitrust policies appropriate to the new electricity market. Defining the relevant market allows an analyst to measure the degree of concentration in the market, *e.g.*, an HHI of 1700 or 2600. That measure is useful as a threshold criterion for deciding whether a particular existing market structure or proposed consolidation warrants detailed analysis, but an analyst should consider several other characteristics of a market before she concludes that a level of concentration that exceeds a specified threshold is, or is not, acceptable. Moreover, generic consideration of those characteristics of a market may suggest the desirability of choosing threshold concentration levels applicable to the electricity market that differ from the threshold criteria the DOJ applies to other markets.

At least eight characteristics of a market, in addition to its degree of concentration, have an effect on sellers' ability to exercise market power: (1) ease of entry; (2) degree of excess capacity; (3) proportion of fixed costs; (4) degree of product homogeneity; (5) buyer-side structure; (6) extent of sellers' knowledge of each other's prices and costs; (7) degree of transparency of any exercise of market power; and (8) extent of potentially

available economies of scale.⁷² The new electricity market will have some characteristics that suggest diminished concern about potential exercises of market power and other characteristics that suggest heightened concern. To further complicate the policy making task, we do not know much about the characteristic of the market that is most important—the extent of potentially available firm-level economies of scale.

Entry into the wholesale market has become easier over the last two decades.⁷³ Generating unit-level economies of scale have declined significantly to the point at which a unit with a capacity of 200 to 400 MW exhausts virtually all of the available unit-level economies of scale.⁷⁴ Moreover, the time required to enter the market has declined from ten years to about three years over the same period of time. This characteristic of the market suggests that the FERC should have less concern about potential exercises of market power by incumbents today than would have been the case twenty years ago. It is hard to know how much significance to attach to this characteristic, however, for four reasons. First, entry still requires a large investment and approximately three years lead time. Second, viable sites for new generating units are scarce in some areas. Thus, the FERC will have to examine each market with care to determine the extent to which site scarcity poses a barrier to entry in each particular market. Moreover, the FERC will have to combine its site availability study with the available data with respect to transmission capacity. A site should not be considered viable if generation added at that site would be inaccessible to most of the grid because of transmission capacity constraints. Third, the existence of significant excess generating capacity at present raises questions about the extent to which incumbents will charge lower prices because of their concerns about potential market entry. A market with large excess capacity is not a particularly good candidate for entry. Fourth, Richard Green and David Newbery have shown that it is costly and hazardous to rely solely on entry, or threat of entry, to limit the exercise of market power by incumbents in a highly concentrated electricity market. In their words:

In the short run the strategies followed by [the incumbents] will have little effect on the level of entry, and in this period they have very considerable market power, which they can exercise without collusion by offering a supply schedule that is considerably above marginal operating cost. They have additional methods of market manipulation that exploit the constraints on the grid's transmission capacity, since their market power in some regional sub-markets is considerably greater than in the country as a whole.⁷⁵

72. See *supra* note 57.

73. Ease of entry reduces the potential for the exercise of market power. See AREEDA ET AL., *supra* note 57, at §§ 420-22; AREEDA & TURNER, *supra* note 31, at § 917; AREEDA & HOVENKAMP, *supra* note 57, at § 917. For the FERC's analysis of entry barriers, see *Kansas City Power & Light Co.*, 67 F.E.R.C. ¶ 61,183 (1994).

74. See Paul Joskow & Nancy Rose, *The Effects of Technological Change, Experience, and Environmental Regulation on the Construction of Coal-Burning Units*, 16 RAND J. ECON. 1 (1985).

75. Green & Newbery, *supra* note 49, at 951.

Green and Newbery conclude that Great Britain's adoption of a strategy in which potential entry is assumed to temper incumbents' exercise of market power is imposing a large deadweight loss on the British economy.⁷⁶

Of course, the present excess capacity is itself a characteristic of the U.S. electricity market that suggests diminished concern with respect to the potential for exercise of market power. Excess capacity can render it more difficult for incumbents to sustain supra-competitive prices.⁷⁷ Again, however, it is difficult to know how much significance to attach to this characteristic of the market, particularly when the excess capacity also reduces the likelihood of market entry or credible threats of entry.

The capital investment required to create a unit of generating capacity has declined over the last two decades, but electricity generation remains a capital intensive activity. Fixed costs constitute a high proportion of total generating costs.⁷⁸ This market characteristic suggests heightened concern about potential exercise of market power, but its relative significance is highly uncertain.⁷⁹

It is hard to imagine a product or service that is characterized by greater homogeneity than electricity. Purchasers neither know nor care about the source of a unit of electricity. High product homogeneity increases concern about potential exercises of market power because it eliminates the availability of marketing strategies, such as product differentiation, that impede attempts to exercise market power.⁸⁰

It is difficult to know what significance, if any, to attach to the structure of the buyer side of the wholesale market. Ordinarily, a highly concentrated buyer market reduces concerns about potential exercises of market power by sellers because buyers then have strategies available that render exercise of market power more difficult.⁸¹ The FERC cannot predict with confidence the structure of the buyer side of the market, however. If states implement retail wheeling, there will be many buyers. If not, the buyer side of the market will be highly concentrated. Even in that situation, however, it is not at all clear that buyer concentration will have its usual effect in the context of the Poolco model. Buyers will be purchasing through a market-clearing institution, Poolco, which is required to act in accordance with a pre-determined least cost dispatch strategy that is designed to yield a single market-clearing price at each node for each time period.⁸² That institutional mechanism seems inherently inconsistent with adoption of the types of purchasing strategies that can confer on buyers

76. Green & Newbery, *supra* note 49, at 944-52.

77. See AREEDA ET AL., *supra* note 57, at § 404e2; AREEDA & HOVENKAMP, *supra* note 57, at § 920.1b6.

78. See generally Joskow & Rose, *supra* note 74.

79. See AREEDA ET AL., *supra* note 57, at § 202c5; AREEDA & TURNER, *supra* note 31, at § 920b.

80. See AREEDA ET AL., *supra* note 57, at § 404c3; AREEDA & TURNER, *supra* note 31, at § 919; AREEDA & HOVENKAMP, *supra* note 57, at § 919.

81. See AREEDA ET AL., *supra* note 57, at § 404c7; AREEDA & TURNER, *supra* note 31, at § 918; AREEDA & HOVENKAMP, *supra* note 57, at § 918.

82. See *supra* notes 43-45.

some ability to limit sellers' ability to exercise market power when both the seller and the buyer sides of a market are concentrated.⁸³

Electricity wholesalers in the new market will have ready access to data that will allow them to draw accurate inferences with respect to each other's pricing strategies and cost structures. The supply schedules submitted by each genco to Poolco each half hour will yield a series of market-clearing nodal prices that each genco can use to make accurate estimates of the pricing strategy and cost structure of every other genco.⁸⁴ This market characteristic increases substantially the risk of exercise of market power in a concentrated market.⁸⁵ It provides each seller with the data that is most useful to it for purposes of explicit or implicit collusive pricing.

The ability of each genco to learn every other genco's pricing strategies and cost structures is attributable primarily to an important characteristic of the new market. It will be highly transparent to everyone. That increases the risk of exercise of market power by providing valuable data to each genco, but it also reduces the potential for exercise of market power in other ways. The market will be highly transparent to buyers, consumer groups, journalists, politicians, the public, and the FERC.⁸⁶ Anyone will be able to detect with ease the extent to which gencos are exercising market power. That characteristic of the market supports two permissible and closely related inferences. First, the FERC can respond to the easily-detected exercise of market power in various ways, *e.g.*, by reimposing price controls or by coercing partial divestiture of generating assets. Second, the FERC's ability to detect exercises of market power, combined with its ability to respond to such exercises in ways that would displease gencos, reduce the likelihood that gencos will exercise market power. This market characteristic may be an important consideration in some of the FERC's decision-making, *e.g.*, with respect to otherwise close decisions whether to coerce divestiture of generating assets and with respect to otherwise close decisions whether to authorize wholesales at unregulated prices.

The FERC should not attach significance to this characteristic, however, when it is required to decide whether to approve a proposed consolidation of gencos. It would be unrealistic for the FERC to approve such a consolidation based on the assumption that it could reimpose price controls on the new entity, or order its divestiture, if the FERC later concluded that the new entity was exercising significant market power. Forced divestiture is a remedy that is extremely difficult and costly to implement. The FERC may need to attempt to induce divestiture in some circumstances, but it is unlikely to be successful except in extreme circumstances, and then only after it conducts long, expensive proceedings. Reimposition of price con-

83. See *supra* AREEDA ET AL., *supra* note 57, § 404c7; AREEDA & TURNER, *supra* note 31, § 918; AREEDA & HOVENKAMP, *supra* note 57, § 918.

84. See *supra* notes 43-44, 81-86.

85. See AREEDA ET AL., *supra* note 57, at §§ 404b, c3, c8; AREEDA & HOVENKAMP, *supra* note 57, at § 920.1.

86. See *supra* notes 43-44, 81-86.

trols is a highly undesirable remedy for market power. Creation of a structurally competitive, deregulated market will produce much better results than acquiescence in a market so concentrated that it must be subjected to price controls.

C. Cost Savings

We have now reached the single most important characteristic of the new generating market—the extent of the potentially available firm-level economies of scale. Most antitrust analysts, including most who have shaped U.S. antitrust policy over the past fifteen years, believe that it is worth tolerating some degree of exercise of market power if that is necessary to allow firms to reduce their unit costs significantly by reaching a size sufficient to take advantage of potentially available large economies of scale.⁸⁷ Large cost reductions can more than offset the effects of exercises of market power on prices in some circumstances. Thus, the DOJ and the courts have acquiesced in numerous consolidations that increased market concentrations above the initial thresholds that trigger close antitrust scrutiny where the proponents of the consolidations produced convincing evidence that large cost savings would result from the consolidations.⁸⁸

The FERC has also attached great significance to potential cost savings in the policies it has previously applied to proposed consolidations in the electricity industry.⁸⁹ The FERC routinely accepted as valid the sometimes questionable claims of the proponents of a consolidation that it would produce large cost savings. In the prior regulatory environment, that practice made sense for three reasons: (1) claims of that type were logically plausible; (2) the consolidation was unlikely to yield significant competitive harm because competition played a limited role in governing the market; and (3) the FERC could use the process of approving the consolidation to improve competitive conditions by conditioning its approval on the new firm's willingness to eliminate vertical restraints on competition. In the dramatically new conditions that are evolving today, the FERC should take a far more skeptical approach to claims that a consolidation of gencos that increases market power above some pre-defined threshold will yield significant cost savings.

A significant proportion of the savings claimed for past IOU consolidations were attributable to the transmission and distribution functions. The FERC should ignore cost savings with respect to those functions for purposes of deciding whether to approve a proposed consolidation of generating assets. In an unbundled environment, the FERC should apply its antitrust policies independently to each of the functions performed by IOUs. It should approve a proposed consolidation conditioned on divestiture of generating assets if application of its antitrust policies yields that result.

87. See AREEDA ET AL., *supra* note 57, at § 408; AREEDA & TURNER, *supra* note 31, at §§ 912e, 939-62; AREEDA & HOVENKAMP, *supra* note 57, at §§ 939-40.

88. See cases discussed in AREEDA & HOVENKAMP, *supra* note 57, at § 917.1.

89. See *supra* notes 9-10.

We know with considerable confidence the magnitude of the present generating unit-level economies of scale. They are completely exhausted by a unit with a capacity of 400 MW.⁹⁰ Economies available through construction and operation of multiple units at a single site might yield further savings up to a maximum capacity of 1600 MW.⁹¹ If those are the only economies relevant to a proposed consolidation of gencos, the FERC can ignore cost savings completely in devising and implementing antitrust policies applicable to gencos. It is hard to imagine a proposed consolidation of gencos that would yield a firm with only 1600 MW of capacity and that would also raise serious concerns with respect to market concentration. The consolidations proposed at present involve IOUs with much larger generating capacities, e.g., an IOU with 5660 MW of capacity has proposed to merge with an IOU with 6038 MW of capacity.⁹² If the FERC approves a consolidation of gencos of this size in circumstances where the consolidation would exceed the market concentration threshold, its action must be predicated on the existence of large firm-level economies of scale.

It is difficult to estimate the firm-level economies of scale that will exist in the generating sector of the new electricity market.⁹³ There is no historical experience that can provide data that is directly relevant to this task. The best we can do is to examine the studies of firm-level economies of scale that were done in the old environment and then to try to adjust the findings in those studies to fit the new environment. I will use as my starting point the comprehensive study by Stephen Breyer and Paul MacAvoy in 1974.⁹⁴ They found that consolidation of generating assets would yield large savings attributable to potentially available firm-level economies of scope and coordination. The cost savings fell into four categories: (1) demand diversity savings; (2) savings attributable to least cost dispatch of generating units; (3) savings attributable to the need to maintain smaller reserve margins; and (4) savings measured with reference to environmental costs attributable to the consolidated firm's access to a broader range of sites for generating units.⁹⁵

If Breyer and MacAvoy's findings apply to the new environment in which gencos will operate, they suggest strongly that the FERC should be willing to tolerate a highly concentrated wholesale market in order to allow gencos to take full advantage of the potentially available economies of scope and coordination. Breyer and MacAvoy found that large cost savings might be obtained by acquiescing in consolidations up to the point at which each genco had the capacity to serve twenty-five percent of the national market.⁹⁶ That would yield a wholesale market with a barely tolerable HHI of 2500 if the relevant market is the entire country. As discussed

90. See generally Joskow & Rose, *supra* note 74.

91. See Joskow & Rose, *supra* note 74. See also Joskow & Schmalensee, *supra* note 1, at 48-54.

92. See Potomac Elec. Power Co. and Baltimore Gas & Elec. Co., FERC Form 1, at 401 (1994).

93. See Joskow & Schmalensee, *supra* note 1, at 54-58.

94. Breyer & MacAvoy, *supra* note 4, at 91-97.

95. Breyer & MacAvoy, *supra* note 4, at 91-97. See also Joskow & Schmalensee, *supra* note 1, at 166-67.

96. Breyer & MacAvoy, *supra* note 4, at 95.

earlier, however, transmission capacity constraints limit the geographic scope of the market relevant to a proposed genco consolidation to areas smaller, perhaps much smaller, than the whole country.⁹⁷ Given the likely size of the relevant markets, consolidation on the scale suggested by the Breyer and MacAvoy study would yield markets with HHIs in the range of 5000 to 10,000. Markets that concentrated would perform miserably.

As Breyer and MacAvoy recognized, however, virtually all of the firm-level economies they found are potentially available through changes in the institutional environment of the electricity industry without the need to acquiesce in a highly concentrated generating sector.⁹⁸ At this point, the characteristics of the Poolco model become relevant to an antitrust analysis of the wholesale electricity market. Use of the Poolco model will allow society to take advantage of *all* of the economies of scope and coordination documented by Breyer and MacAvoy, even if the market were to consist of hundreds of gencos, each with a capacity of only 400 to 1600 MW. Of course, proponents of the bilateral trade model contend that it would have the same effects. If the FERC believes that contention, its antitrust policies should be the same whether it embraces the Poolco model or the bilateral trade model. If it does not believe those contentions, it should reject the bilateral trade model. Either way, the FERC should not credit a proposed consolidation with cost savings that will be produced by the transition to a competitive market even in the absence of the consolidation.

Are there potentially available firm-level economies other than those found by Breyer and MacAvoy? Proponents of consolidations claim that they will produce large savings attributable to managerial functions, *e.g.*, accounting, personnel, and supervision, and to expertise, *e.g.*, a larger genco may be able to recruit and organize a better engineering staff that can perform its functions at a lower cost per unit of output. The FERC should view claims of that type with skepticism for three reasons. First, the empirical support for large economies of scale at the firm level is weak in the context of most markets.⁹⁹ Second, most of the savings attributed to proposed consolidations of large gencos are likely to be realized as a result of the transition to a competitive market even in the absence of the consolidations. The transition from regulated monopoly to unregulated competition *always* requires market participants to reduce their bloated staffs and costs.¹⁰⁰ Third, any potentially available firm-level economies may be attainable consistent with a geographic pattern of ownership of generating assets that raises no market concentration concerns. A genco might have a total capacity of 10,000 MW, for instance, and yet own no more than 2000 MW of capacity in any relevant wholesale market.

97. See *supra* notes 62-70; Pierce, *supra* note 19, at 333-35.

98. See BREYER & MACAVOY, *supra* note 4, at 91-107.

99. See AREEDA ET AL., *supra* note 57, at § 408; AREEDA & TURNER, *supra* note 31, at §§ 948-61. See also JOSKOW & SCHMALENSEE, *supra* note 1, at 54-58.

100. See John Meyer & William Tye, *Toward Achieving Workable Competition in Industries Undergoing a Transition to Deregulation: A Contractual Equilibrium Approach*, 5 YALE J. ON REG. 273, 277-79 (1988).

Proponents of genco consolidations undoubtedly will claim that their proposed transaction would produce cost savings attributable to other sources. At least some of these claims may well prove to be true, but the FERC will not be in a position to verify or refute claims of this type in the near future. The data required to perform this critical task will not be available until we have several years of experience operating in the new environment. Until the FERC has the historical data required to evaluate claims of savings attributable to a proposed consolidation of generating assets that would produce a market concentration above the threshold of antitrust concern, it should consider all such claims skeptically.

D. Policy Implications

My evaluation of the antitrust issues raised by the transition to the new method of providing electricity service supports the following recommended policies. First, the FERC should be prepared to approve, and indeed to encourage, virtually any conceivable consolidation of transmission assets. All such transactions are likely to yield large cost savings and no adverse effects on competition. Second, the FERC should accord near dispositive deference to the views of state PUCs when it is confronted with a proposal to consolidate distribution assets. Many such transactions are likely to yield cost savings, while the effects of such transactions on market performance are both highly uncertain and largely within the control of state PUCs. Third, the FERC should adopt a conservative initial set of policies with respect to proposed changes in the structure of the generation market. The conservatism I urge in that context has several elements that require elaboration.

First, the FERC should adopt and apply the threshold market concentration criteria the DOJ uses to determine whether a proposed consolidation in an unregulated market raises antitrust concerns. While the new electricity market has several unusual characteristics that may have effects on the relationship between market concentration and potential exercise of market power, it is impossible to predict with confidence the net effects of those characteristics. Second, the FERC should resolve all uncertainties with respect to the geographic scope of a wholesale market in favor of the smallest plausible market. The magnitude, temporal scope, and effects of transmission capacity constraints are highly uncertain at present. Third, the FERC should adopt a posture of skepticism toward any claims that a proposed consolidation that exceeds the market concentration threshold would yield savings sufficient to justify approval of the consolidation. Again, the existence of economies of that magnitude is highly uncertain at present.

These are two alternatives to this approach to proposed consolidations that might be appealing in some circumstances. First, if a market would be large enough to be compatible with a proposed consolidation but for the existence of a transmission capacity constraint with limited geographic and temporal dimensions, *e.g.*, a path from two generating plants that is constrained ten percent of the time, the FERC might be able to devise a condi-

tion to approval of the proposed consolidation that is narrowly-tailored to avoid the potential problems created by the capacity constraint. The FERC might require, for instance, that the plants affected by the capacity constraint be bid at a price equal to the short-term marginal cost during the periods in which the path is constrained.

Second, the FERC could approve a proposed genco consolidation in conditions in which the geographic scope of the relevant market is uncertain if the parties to the transaction were willing to commit to divest all or a portion of their generating assets in the future if the FERC then determines that the market is unduly concentrated. Some utilities might prefer this alternative for two reasons: (1) they would be able to retain all their generating assets if the performance of the market rebuts any inference of exercise of market power; and (2) even if they are required to divest generating assets, they would not have to complete all of the arduous legal and financial tasks attendant to a divestiture at the same time their resources and personnel are severely stressed by performance of the many tasks attendant to a merger. This alternative is critically dependent on the parties' unequivocal acceptance of the FERC's power to order a subsequent divestiture, however. The FERC lacks the power to order a divestiture of assets absent an IOU's voluntary acquiescence in the FERC's assertion of such a contingent power as a condition to an order approving a consolidation. The FERC has indirect means of inducing involuntary divestiture in some circumstances, but those means are too blunt and costly to warrant an assumption that they would be fully effective in eliminating the adverse effects of the FERC's approval of consolidation of generating assets that has the effect of inflating the price of electricity by allowing sellers to exercise market power.

I want to emphasize that I propose these conservative merger policies only as initial, interim policies. A single change in the relevant law would have a dramatic effect on the analysis and on the policy prescriptions. If Congress were to amend the FPA to confer on the FERC exclusive power to approve or disapprove any proposed expansion of transmission capacity, the FERC could approve virtually any proposed consolidation of generating assets without any concern that it might have an adverse effect on the performance of the market.¹⁰¹ In that changed situation, the FERC could safely assume that the electricity market would evolve in a manner generally analogous to the gas market. The wholesale electricity market relevant to a proposed consolidation would consist of at least an entire region and perhaps even the entire continent. Such a market would perform well even if it consisted of only five or six extremely large gencos.

Absent such a statutory amendment, any of several potential changes in our understanding of the characteristics and performance of the new wholesale electricity market could suggest the need for a change in policy that is more hospitable to proposed consolidations of gencos. These include: (1) evidence that the relevant markets are larger than we initially

101. See *supra* notes 62-70; Pierce, *supra* note 19, at 333-35.

assumed because transmission capacity constraints have fewer effects than we initially assumed; (2) evidence that relatively concentrated wholesale electricity markets do not give rise to significant exercises of market power; and/or (3) evidence that economies of scale in the generation and wholesale of electricity are larger than we initially assumed. A few years experience with competitive wholesale markets will provide solid data relevant to each of those issues.

The same wide range of uncertainty that should induce the FERC to take a cautious and skeptical approach toward proposed consolidations should induce it to take a similar approach to any potential coerced divestiture of generating assets in any context except as a condition to the approval of a proposed consolidation of vertically-integrated IOUs. The FERC (or a state PUC) could well regret any divestiture ordered in today's conditions of uncertainty once it has access to vastly superior data relevant to the relationship between market structure and market performance in the new environment. In the context of deciding whether to attempt to coerce partial divestiture of generating assets, the FERC should resolve all uncertainties in favor of: (1) the largest plausible geographic market; (2) the weakest plausible relationship between market concentration and exercise of significant market power; and (3) the largest plausible economies of scale in performing the generation and wholesale functions. After just a few years experience with competitive wholesale markets, the FERC will have good data that will either confirm or refute any present beliefs that the pre-existing market structure requires divestiture.

This leaves just one crucial issue to be addressed. What criteria should the FERC use to decide whether to authorize unregulated (or loosely regulated) sales in a particular wholesale market? In this context, the FERC should apply the permissive criteria applicable to potential divestitures rather than the restrictive criteria applicable to proposed consolidations, for three reasons. First, price controls are so destructive that the FERC's goal should be to create an unregulated, structurally competitive wholesale market. Even a flawed market structure that produces significant exercises of market power is likely to perform better than a market that is subject to price controls. Second, maximizing the scope of unregulated wholesales will maximize the amount and value of the data that will be available to the FERC to devise well-supported long-term policies applicable to the structure of the wholesale market. After a few years experience with several unregulated wholesale markets with widely varying characteristics, the FERC will have a solid data base that will allow it to address the crucial issues of geographic scope, relationship between market concentration and market performance, and existence and scope of economies of scale. If the FERC instead retains price controls on wholesales in all markets that are arguably unduly concentrated, it will experience great difficulty in its efforts to address those issues because it will lack the data required to perform that task. Third, the FERC should not conceive of imposition or retention of price controls as an end in itself. Rather, the FERC should use its power to impose price controls as one of its primary sources of leverage

in its efforts to obtain a sufficiently competitive market structure. Any order imposing or retaining price controls on a participant in the wholesale market should be predicated on a finding that the relevant market is unduly concentrated and should be coupled with a commitment to eliminate the price controls if the market participant acts in ways that yield an acceptable market structure, *i.e.*, by divesting part of its generating assets. In other words, the FERC should conceive of its power to impose, retain, relax, or eliminate price controls as one of its most potent tools to induce any structural changes in wholesale markets it ultimately finds necessary to create a structurally competitive market. It follows that the FERC should eliminate price controls in all markets that are even arguably structurally competitive today. In any context in which there is doubt about that issue, however, the FERC should eliminate the price controls on a temporary, experimental basis, *e.g.*, for three to five years. By the time the experiments end, the FERC should have the data necessary to address the critical issues of geographic scope, relationship between market concentration and exercise of market power, and magnitude of economies of scale.

V. CONCLUSION

To summarize, the FERC should encourage all potential consolidations of transmission assets. It should defer to the positions of state PUCs with respect to all proposed consolidations of distribution assets. It should take a conservative initial attitude toward all proposed changes in the structure of the wholesale market, both proposed consolidations and potential coerced divestitures. It should eliminate price controls on virtually all wholesales on an experimental basis and use the data made available by that experiment as the basis for a more refined set of policies applicable to the structure of the wholesale market in the dramatically new environment that it is in the process of creating.