

**Strawman discussion paper for market power monitoring and mitigation panel
Technical Conference on Market Structure and Design**

Docket No. RMO1-12

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The purpose of this paper is to stimulate a discussion that can guide monitoring efforts and the design of market power mitigation measures. The paper proposes principles of generation market power mitigation, which is a component of the Commission's standard market design rulemaking.¹ To place these principles in context the paper briefly addresses market power issues in electric transmission, gas commodity sales, and gas transportation.

Definition of market power

Market power is the ability to raise market price above the competitive level. Market power can be exercised by withholding capacity or output from the market (physical withholding) or raising the price or offer (economic withholding). For a price to be above the competitive level, the price must reflect an excess over true scarcity value. Market power includes discriminatory conduct and cross-subsidization when multiple stages of production are involved. Some definitions of market power include the condition that the act must be profitable; unprofitable actions are not likely to occur or be sustained, and therefore are not a policy concern.

Mitigation policy

The Commission's mitigation of gas pipeline and electric transmission market power reflects the fact that pipeline and transmission assets generally exhibit natural monopoly characteristics. Raising prices for pipeline and transmission service should be addressed through continuing cost-of-service rate regulation. Discriminatory conduct and cross-subsidization should be addressed through standards of conduct.

The Commission's mitigation of electric generation market power reflects the general determination that sufficient competition can exist in generation supply as long as certain structural conditions are present. Generation market power mitigation therefore should focus on preventive measures and monitoring. Preventive mitigation measures should be established on a regional basis according to the likelihood of structural characteristics and institutions in each region of supporting workable competition. In well-developed markets, certain preventive measures should be part of standard market design, and further mitigation should not be necessary. Only in cases where the Commission deems generation market power to be significant and sustained should the Commission need to impose further mitigation in well-developed markets. The Commission should specify the essential features of well-developed markets, which might include but are not limited to the existence of a central organized bid-based balancing market, market monitoring, price-responsive demand, or a Regional Transmission Organization (RTO) or

¹ Docket RM01-12.

Independent System Operator (ISO). Mitigation generally should be prospective in order to avoid the regulatory risk and disruption to settlements and financial accounting caused by refunds. Effective monitoring by RTOs and the Commission should ensure that customers are not unduly harmed prior to Commission response. If and when a region develops substantial price-responsive demand, there will be less of a need for mitigation rules, and given the inherent imperfections and distortions of mitigation rules, more flexibility should be allowed. In regions lacking the structural characteristics and institutions that support workable competition, preventive mitigation should be more stringent and may include the denial of market-based rate authority and greater scrutiny of mergers.

Competitive prices

Competitive prices are high enough to recover marginal costs of production. In the short run, competitive prices are set by short run marginal cost. In the long run, marginal costs include capital investment costs. As the D.C. Circuit has held, “In a competitive market, where neither buyer nor seller has significant market power, it is rational to assume that the terms of their voluntary exchange are reasonable, and specifically to infer that price is close to marginal cost, such that the seller makes only a normal return on its investment.”²

² In a dynamic market, there are often times of shortage and surplus due to weather and other random factors such that returns may often fall above or below normal levels. During periods of long- or short-term scarcity, competitive prices should be expected to be higher than any supplier’s variable cost, as high as the value placed on the product by customers, reflecting a scarcity value that is the source of investment cost recovery and a signal to the market to bring supply and demand in balance. During periods of short- or long-term surplus, prices are set according to short run marginal cost. Marginal costs include not only variable costs but also the marginal opportunity cost of all legitimate opportunities, costs, and risks.

High market prices due to true scarcity should be distinguished from prices reflecting the artificial scarcity of market power. While scarcity-related high prices are necessary signals to bring supply and demand in balance, high prices due to market power send distorted signals to market participants and investors, and create unjustified transfers of wealth from customers. This distinction implies that withholding output should be a key subject of monitoring efforts. The focus on withholding also implies that monitoring efforts would most productively focus more on the control of output, either through ownership or contract, than pure financial contracts, which present no opportunity for withholding capacity or output.

Just and reasonable rates and market power

Competitive prices reflecting no market power should be considered just and reasonable.

²Tejas Power Corporation v. FERC, 908 F. 2d 998, 1004 (D.C. Cir. 1990).

The Commission should intervene in markets, beyond standard preventive measures, when market power is significant and sustained. Further mitigation should be used only when it is clear that short-term supply and demand forces cannot prevent significant and sustained market power. It is administratively difficult to accurately mitigate prices because the effort is costly, subject to error, and creates regulatory risk. Moreover, demand response and technological innovations such as distributed generation can solve market power problems in a way that is more potent and lasting than mitigation rules.

Significant market power involves prices some significant degree above competitive levels. Sustained market power includes circumstances which cannot be remedied by short-term supply, demand, or market rules. Probably it should be measured in months rather than hours or years. Sustained market power includes recurring market power that may appear and disappear with cyclical demand variation. Investment and entry of generation or transmission, given significant construction and siting timelines, typically takes too long to prevent significant and sustained exercises of market power. The Commission may wish to develop more specific standards of significant and sustained market power. For example, the Commission may wish to adopt a standard that balances the tradeoff between the magnitude and the length of time of the price increase. However, the analysis of whether supply and demand responses are likely to mitigate price effects may need to be on a case-by-case basis as they may vary.

Market monitoring efforts for the sake of performance assessments need not be limited to significant and sustained market power. Indeed, one of the principal goals of market monitoring is to serve as an early warning system for events that are not yet severe.

Antitrust statutes

Standards guiding intervention under the Federal Power Act and Natural Gas Act need not follow those derived from antitrust statutes. Antitrust statutes provide for different standards of liability, enforcement mandates, and tools than the Commission's statutes. Antitrust law is also directed primarily at willful acquisition of market power as opposed to market power that may have been inherited from an era of regulated monopolies. "The offense of monopoly under Section 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966).

***Ex post* vs. prospective assessments**

The analysis used to evaluate the exercise of market power after the fact may vary from the prospective analysis used to assess market power in the future. *Ex post* analysis should rely primarily on actual evidence of withholding output. Market monitoring entails quantitative assessments of actual prices and quantities. In contrast, prospective assessments of future market power such as market-based rate and merger proceedings at the Commission may rely as much on structural indicators as on behavioral evidence. Historical data are not conclusive as predictions of the effect of a structural change in the

market, and can be poor indicators when an industry is in dramatic transition as the U.S. electric power industry has been over the last decade. Prospective market power analysis therefore has relied almost exclusively on structural measures such as market share and market concentration.

Ex ante structural analyses, in the way they have been conducted at the Commission through company-specific filings, are particularly difficult to conduct. Such analyses involve defining relevant product and geographic markets. In electric markets the geographic scope of markets can change on an hourly basis so only snapshots are possible. Their scope depends on complex transmission interactions and constraints potentially a thousand miles from a given delivery point. Such complexities are difficult to incorporate into standard filing requirements for company-specific assessments. The degree to which the Commission relies on *ex ante* structural analyses going forward should account for the inherent difficulty of the task. Market-wide prospective analyses by RTO market monitors or FERC, either structural or behavioral modeling, may be worthwhile.

Unilateral vs. coordinated market power

Market power may be exercised unilaterally or in explicit or tacit coordination with other firms. Coordinated activities are *per se* illegal under antitrust statutes. Market power from unilateral or coordinated actions is equally objectionable under the Commission's just and reasonable rate standard.

Electric generation markets

Withholding of electric generation output can take two forms. In electric power auctions, generators might refuse to bid (physical withholding) or bid so high as not to be selected in the auction when a competitive bid would have (economic withholding). The ability to exercise market power stems from the control of a unit's operation and bidding.

The severe inelasticity of demand in today's electric markets increases the market power of all generators regardless of size. Some U.S. markets have high bid caps as proxies for demand response, to prevent market breakdown resulting from excessively high prices. Some markets abroad have this proxy set at the administratively estimated value of loss load (VOLL). State and federal policies to promote price responsive demand will help customers reveal their own true willingness to purchase energy, which may be the most potent market power mitigation measure.

Market prices for generation should reflect the marginal opportunity cost of production. Marginal opportunity costs include variable operating cost, the opportunity cost of selling to neighboring regions, forced outage risk costs, start-up and no-load costs, other technical inflexibilities, and the opportunity cost of selling at other time periods due to limited hydropower reservoirs or environmental constraints, and any other legitimate opportunity cost or risk. In times of scarcity, prices should be expected to exceed variable operating cost and reflect the marginal value placed on the product by customers.

The marginal costs of some resources, such as the highest levels of output on a unit, may be very high due to the expected value of the risk of failure or damage to the unit.

Market rules such as poor auction designs can create or enhance market power by artificially limiting entry, preventing demand response, or providing artificial incentives to withhold. Market design choices in the electric industry have been difficult and controversial. Many of the problems with generation markets identified by market monitors in the first few years of regional market operation have been caused by design flaws. Market monitoring should continue to identify any such problems and propose solutions prospectively. The best way to avoid market power stemming from poorly designed markets is to establish efficient designs from the start using the best observed practices.

Electric transmission

Electric transmission is generally a natural monopoly. The market is not workably competitive and requires bright-line enforceable rules preventing withholding and abuse of affiliate relationships. Physical withholding is addressed by requirements to provide all available capacity to the market. The incentive to raise transmission prices is controlled through transmission rate regulation. The incentive to raise transmission costs or degrade service quality to downstream commodity market competitors is a subject of continuing mitigation efforts. Transmission owners with an obligation to serve may also have an incentive to depress wholesale prices by withholding transmission used to export power to the disadvantage of customers in other areas. Order No. 888 removed some of the ability to exercise these forms of vertical market power through open access tariff rules for non-discriminatory access. However there is still an incentive and ability for transmission providers to discriminate against competitors. Moreover, the incentive has increased by granting market-based rate authority to affiliates of transmission providers. Complaints to the Commission suggest that transmission providers have the ability to treat competitors differently for reserving and scheduling capacity, calculating available capacity, information sharing, curtailing transactions, and charging for imbalances.

Discriminatory access is difficult to regulate and enforce with behavioral rules. Structural mitigation is more potent, lasting, and administratively efficient. RTOs and independent system operators (ISOs) are structural mitigation because they remove control of transmission access and service from companies that compete in generation markets.³ In the future this market-based rate authority should be granted according to whether the market has the structures in place to support competition. Such structures would remove the ability of transmission providers to discriminate against competitors.

³ The voluntary separation of ownership would be a step further than separation of control. Independent Transmission Companies (ITCs) remove the incentive to withhold transmission lines from service, promote maximum use of the grid, and facilitate the expansion of transmission capacity through new investment.

Gas transportation

Gas transportation also exhibits natural monopoly characteristics, thus withholding rules and standards of conduct are necessary. Withholding of gas transportation capacity to discriminate against downstream competitors of pipeline affiliates is a vertical effect of market power. Extensive regulations apply to prevent any withholding of transportation capacity. Order No. 637-A at 31,564 states: “the Commission’s regulations protect against the exercise of market power by directly limiting the withholding of available transportation capacity through the requirement that pipelines sell all available capacity at a regulated rate.” Monitoring efforts should focus on whether pipeline companies complied with these regulations. In particular, the Commission should monitor whether all capacity was made available upon request, either as firm or interruptible.

Gas sales

Commodity gas sales are the most competitive of the four sectors. There is no significant concern about horizontal market power effects in gas sales. The Commission has authority over some gas commodity sales, but has granted blanket certificates for anyone to sell at market-based rates. The market power concern related to gas commodity sales is the vertical effect of pipelines acting in a way to raise input costs for competitors as discussed above.

Generation market power mitigation

Mitigation measures should be specified clearly by FERC and RTO policies and known well in advance to allow participants to make long term commitments with a minimum of regulatory risk. Ex post mitigation such as refunds and revising prices after they are posted or agreed upon should be avoided if at all possible. Ex post measures undermine the long-term commitments that are necessary for market participants to undertake efficient investments and protect against market risks.

Structural mitigation is generally more effective than behavioral mitigation. With workably competitive structures, market participants can operate with minimum regulatory risk and maximum flexibility. Policies that promote regional diversification rather than concentration in small geographic markets would reduce market power. These policies include merger policy, which accounts for the geographic overlap of merger applicants⁴; and this standard market design initiative which reduces transactions costs of functioning under different sets of rules.

Ex ante structural analysis as part of a program for market-based rate authority poses analytical and administrative difficulties. Defining relevant geographic markets in which generation market share is measured requires many snapshots of transmission system topology and estimates of how the topology might change in the future. Some form of ex

⁴ See Appendix A of the Merger Policy Statement, Order No. 592.

ante structural analysis may be necessary in regions with no RTO or organized ISO market to administer preventive market power mitigation.

Market forces such as supply or demand responses are more potent and lasting means of mitigating market power. Efforts to promote price-responsive demand through market rules, meter dissemination, and state-regulated retail tariff structures should be a priority for all parties involved in restructuring. Best practices should be identified and imitated.

Market power stemming from poor market design should be identified promptly and remedied with prospective market design changes. Market monitoring by RTOs and the Commission's new Office of Market Oversight and Investigation are critical to this effort. The standard market design rulemaking is intended in part to avoid past market design mistakes.

Monitoring of physical withholding of generation should be a primary focus of market monitoring. However, bright-line enforceable rules preventing such behavior may be difficult to administer and inferior to other mitigation measures.

Unorganized markets where there are no RTOs, no bid-based balancing markets, and barriers to regional trading are likely to have structural characteristics that allow significant and sustained market power to arise, and therefore may require a different approach from well-developed markets.

Well-developed markets may not require more than locational offer caps, maximum offer caps as proxies for demand response, and gradual introduction of bidding flexibility. The level of offer caps in market design should depend on whether there are other mechanisms such as capacity reserves markets or other provisions for the recovery of fixed costs. Market design should never interfere with long-term contracting because such long-term commitments minimize exposure to spot market volatility and mitigate boom and bust cycles.

Locational market power in generation load pockets with only one generating unit or a small number of units requires on-going behavioral mitigation. In such cases not even divestiture reduces the incentive or ability of the generator to raise prices. "Must-run" rules should provide scarcity-related price signals to the extent that supply and demand responses are possible in load pockets.

Maximum offer caps to serve as a proxy for demand response may be necessary to prevent market breakdown. These might be set according to an estimated Value of Lost Load (VOLL). Maximum offer caps might be especially warranted during the initial startup of new systems.

Generator bidding flexibility should be introduced gradually. Some regions have daily rather than hourly bidding, fixed startup and no-load bids, and automatic ex ante mitigation rules based on thresholds of conduct and impact. These measures may be necessary in the transition period to full competition. Market rules should not require

offers to be below the marginal opportunity cost of any unit including the geographic opportunity cost of selling to other regions and the temporal opportunity cost of selling energy-limited resources during other time periods.