

**UNITED STATES OF AMERICA**  
**BEFORE THE**  
**FEDERAL ENERGY REGULATORY COMMISSION**

Regulation of Short-Term	)	
	)	
Natural Gas Transportation	)	Docket RM98-10-000
	)	
Services	)	
	)	
Regulation of Interstate	)	
	)	
Natural Gas Transportation	)	Docket RM98-12-000
	)	
Services	)	

**COMMENTS OF THE REGULATORY STUDIES PROGRAM**  
**OF THE MERCATUS CENTER, GEORGE MASON UNIVERSITY<sup>1</sup>**

The Regulatory Studies Program (RSP) of the Mercatus Center at George Mason University is dedicated to advancing knowledge of the impact of regulation on society. As part of its mission, the RSP employs contemporary economic scholarship to assess rulemaking proposals from the perspective of the public interest. Thus, the program's comments on the Commission's proposed changes in the regulation of short-term and long-term gas pipeline transportation do not represent the views of any particular affected party or special interest group, but are designed to evaluate the effect of the Commission's proposals on overall consumer welfare.

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<sup>1</sup> These comments were prepared by Jerry Ellig, a senior research fellow at the Mercatus Center.

## I. BACKGROUND

Like many previous Commission rulemakings, the Notice of Proposed Rulemaking on Short-Term Transportation (NOPR) is based on the assumption that when markets are competitive, they provide customers with price and service options that are more just and more reasonable than would occur under regulation. This assumption is well-supported by scholarly research on natural gas and a wide variety of other regulated or previously regulated industries.<sup>2</sup>

The NOPR makes a well-reasoned case that price caps based on the average cost of service create perverse incentives in the market for short-term (less than one year) gas transportation. In times of peak demand, price caps prevent the allocation of pipeline capacity to parties who value it most highly. Price caps also discourage capacity holders who have alternatives to gas transportation, such as storage, from releasing their capacity to others who lack good alternatives or may value the transportation services more highly.<sup>3</sup> These results are common themes in the economics literature on peak-load pricing.<sup>4</sup> The Commission proposes to replace price regulation with an auction mechanism and other regulations intended to prevent pipelines from exercising monopoly power by withholding available capacity from the short-term market.

The Commission intends to retain cost-based regulation of long-term transportation, but proposes to permit negotiated rates and terms of service to encourage innovation. In addition, in the companion Notice of Inquiry (NOI), the Commission seeks comments on a variety of long-term transportation issues, including rate design, incentive rates, market-based rates, and certification issues.

## II. SHORT-TERM MARKET ISSUES

The Commission's proposals on short-term transportation attempt to accomplish two distinct objectives: prevent the exercise of market power, and organize markets in ways that reduce information costs and transaction costs. The NOPR does not always draw clear distinctions between these two objectives. Each objective should be considered separately, because each justifies different aspects of the proposals to a different degree. There are plausible reasons to believe that some limited Commission rules are necessary to mitigate market power in some cases. But apart from the monopoly issue, it is questionable that transactions costs are sufficiently high to justify

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<sup>2</sup> For a summary of relevant research, see Clifford Winston, "Economic Deregulation: Day of Reckoning for Microeconomists," *Journal of Economic Literature* 31 (Sept. 1993), 1263-89; Robert Crandall and Jerry Ellig, *Economic Deregulation and Customer Choice* (Fairfax, VA: Center for Market Processes, 1997); Kenneth W. Costello and Robert J. Graniere, *The Deregulation Experience: Lessons for the Electric Power Industry* (Columbus, OH: National Regulatory Research Institute, 1996).

<sup>3</sup> NOPR at 23, 27. (Note: All page numbers in the NOPR and NOI refer to page numbers in the text version available through FERC's CIPS database on the Web.)

<sup>4</sup> Alfred Kahn, *The Economics of Regulation*, Vol. II (1992), Chs. 3 and 4.

the Commission's proposals to mandate auctions. In addition, while preventing the exercise of market power is a relatively limited goal that fits the Commission's expertise, designing optimal exchange institutions is a task that may be well beyond the capacity of any regulatory agency.

### *1. Curbing Market Power*

If the short-term market is not competitive, the Commission could choose to curb market power by regulating rates or by preventing pipelines from withholding capacity. If the Commission sets rates at the competitive market level, then pipelines have a natural incentive to sell the same quantity they would sell in a competitive market. Alternatively, if the Commission prevents pipelines from withholding capacity and engaging in undue price discrimination, then pipelines have a natural incentive to sell capacity at the same price they would charge in a competitive market.

Historically, the Commission has employed price regulation, but the NOPR proposes to replace price regulation in the short-term market with quantity regulation. For this approach to succeed in constraining market power, it is sufficient that pipelines be prevented from withholding capacity and engaging in undue price discrimination.

The only regulation needed to accomplish these objectives would be that which allows the Commission to ensure that all capacity is sold, that capacity rights are fungible and transferable, and that pipeline rules and operating procedures are not being used to thwart competition. A number of elements of the Commission's proposal help accomplish these goals. Creation of uniform nominating procedures and increasing customers' ability to segment capacity would make capacity rights more fungible. Increased reporting of information about available capacity and pipeline operations would help the Commission and capacity purchasers monitor pipelines to ensure that capacity is not withheld. Revision of penalties and operational flow orders would help ensure that they are not used as barriers to competition.

In addition, a capacity owner's right should be as freely transferable as other forms of property; owners should be allowed to sell, lease, rent, or option their capacity to any party under mutually agreeable terms.<sup>5</sup> If capacity rights are freely transferable, arbitrage opportunities in competitive markets can be relied upon to prevent undue price discrimination.<sup>6</sup> These provisions should effectively constrain any market power in the short-term market.

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<sup>5</sup> R.T. Smith, A.S. De Vany, and R. J. Michaels, "Defining a Right of Access to Interstate Natural Gas Pipelines," *Contemporary Policy Issues* (April 1990).

<sup>6</sup> It is a fundamental tenet of price theory that price discrimination is not possible in markets where resale is easy: "If the monopolist is to sell at a higher price to some customers than to others, there must be something that prevents the customers who benefit from the low price from reselling to those less favored by the monopolist. If such resale is possible, arbitrage between low-price and high-price customers will eventually break down the discriminatory scheme." Stephen Martin, *Industrial Economics* (1998) at 375-76.

A pipeline can profit from withholding capacity only if other capacity holders do not offer to fill the gap by selling their own capacity. The NOPR notes that pipelines themselves hold only 7 percent of their firm capacity. Other capacity holders include electric utilities (21 percent), industrial users (5 percent), marketers (17 percent), producers (6 percent) and local distribution companies (44 percent).<sup>7</sup> Two prominent contributors to the academic literature on open access note, “Finding hard evidence of monopoly is unlikely because the capacity of pipelines now is in the hands of approximately 1,400 shippers.”<sup>8</sup> Given this distribution of capacity rights, it is not clear that pipelines have the ability or the incentive to exercise market power by withholding some part of the 7 percent of capacity that they actually control.

The Commission asks whether it should solicit information that would let it make a finding on whether the short-term market is competitive, or if the short-term market would become competitive once the changes discussed above are implemented.<sup>9</sup> Considering the fragmented control over pipeline capacity, the Commission should be able to presume that the short-term market is either competitive now or will become so with the adoption of some additional rules to prevent withholding of capacity, make capacity more fungible, and enhance parties’ ability to transfer capacity rights. Since all of the ingredients for a competitive market are there, assuming that the market is not competitive unless proven otherwise needlessly increases the cost of regulation while producing no gain in consumer welfare.

## 2. *Designing efficient markets*

The NOPR actually goes beyond the objective of constraining market power. Several parts of the Commission’s proposed rules aim to create a specific type of market believed to be the most efficient: a centralized auction market in which all participants have access to the same information. The auction requirement is obviously the principal means of achieving this goal. In addition, mandated disclosure of information about transactions seeks to reduce information costs, particularly for small players.<sup>10</sup>

## 3. Auctions

Information-rich auction markets offer the most efficient means of trading standardized commodities, for such markets come closest to approximating the textbook model of perfect competition.<sup>11</sup> However, centralized auction markets maximize

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<sup>7</sup> NOPR at 9.

<sup>8</sup> Arthur De Vany and W. David Walls, “Open Access and the Emergence of a Competitive Natural Gas Market,” *Contemporary Economic Policy* 12 (April 1994) at 95.

<sup>9</sup> NOPR at 36.

<sup>10</sup> NOPR at 13-14.

<sup>11</sup> Kevin A. McCabe, Stephen J. Rassenti, and Vernon L. Smith, “Smart Computer-Assisted Markets,” *Science* (Oct. 25, 1991), 534-38; “Auction Design for Composite Goods: The Natural Gas Industry,”

consumer welfare only if all customers desire to purchase homogeneous products or services. As the Commission notes in its discussion of negotiated services, individual customers might not always want standardization.<sup>12</sup> If some customers want customized services, a mandatory auction of standardized services will make them worse off than they would be if they could make bilateral deals.<sup>13</sup>

One could perhaps try to rescue the auction concept from this criticism by proposing separate auctions for different, customized services. But if the market for a particular service at a particular time is thin, a formal auction may be no more efficient than a bilateral deal. A formal auction could even be less efficient, because the total transaction costs of setting up an auction for a small market may exceed the total transaction costs of bilateral deals.

The Commission recognizes some of these difficulties in its discussion of negotiated rates:

...the Commission has not resolved how the negotiation of short-term rates and services could be coordinated with the capacity auction process proposed in this NOPR. Typically, auctions involve the trading of standardized products and services, whereas negotiated services may not be sufficiently tradable....Can negotiation of services be accomplished in combination with the auction process? What effect would the negotiation of short-term services have on the tradability of short-term capacity?<sup>14</sup>

Dynamic markets impose an additional layer of complexity. Innovation and creativity have historically played a large role in delivering larger-than-expected consumer benefits in other industries that have moved from regulated monopoly to competition.<sup>15</sup> In addition to promoting efficient use of existing capacity, competition produces innovations in technology and new types of transactions that we cannot now envision. Major innovations spurred by competition and deregulation include market hubs, sophisticated risk management contracts, and “gray market” transactions to avoid price controls on short-term transportation in natural gas;<sup>16</sup> more rapid deployment of

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*Journal of Economic Behavior and Organization* 14 (1990), 127-49; “Designing ‘Smart’ Computer-Assisted Markets,” *Journal of Political Economy* 5 (1989), 259-83; Stephen J. Rassenti, Stanley S. Reynolds, and Vernon L. Smith, “Cotenancy and Competition in an Experimental Auction Market for Natural Gas Pipeline Networks,” *Economic Theory* 4 (1994), 41-65.

<sup>12</sup> NOPR at 120.

<sup>13</sup> For more detail on these arguments, see Robert J. Michaels, “Wholesale Pooling: The Monopolist’s New Clothes,” *Electricity Journal* 7 (Dec. 1994), 64-76.

<sup>14</sup> NOPR at 119.

<sup>15</sup> Winston, *supra* note 1 at 1276-77, notes, “Economists effectively predicted lower bounds [of deregulation’s benefits] by not recognizing further adjustments by firms. These developments were not predicted because economists’ predictions generally rely on models that assume no technological change. But as our findings indicate, these models are inappropriate when changes in capital structure are a dominant part of a policy change such as deregulation.”

<sup>16</sup> Crandall and Ellig, *supra* note 1 at 15; Catherine Abbott, “The Expanding Domain of the Nonjurisdictional Gas Industry,” in J. Ellig and J. Kalt (eds.), *New Horizons in Natural Gas Deregulation* (Praeger, 1996), 187-94; NOPR at 21-22.

fiber optics and accelerating productivity in telecommunications;<sup>17</sup> cost-reducing hub-and-spoke systems, low-cost airlines, regional airlines, and an expanded role for airline computerized reservation systems;<sup>18</sup> and adoption of new communications technologies and the use of third-party logistics firms in trucking.<sup>19</sup>

The needs of market participants change over time, and the marketplace institutions that facilitate exchange must be able to evolve as participants' needs change. Even if the Commission could somehow design an ideal auction procedure that accommodates all customers who prefer customized services, there is no guarantee that an exchange process that is optimal this year will continue to be optimal in the future. Arthur De Vany, an economist who has written extensively on the gas industry, summarized the problem aptly:

Given the complexity of regulating an industry, it is better to seek institutions that support flexible, adaptive search over a wide space of possible solutions. Policy makers and economists often look for the sole solution. However, there rarely are single best answers to questions, and highly optimized solutions are tied so tightly to the problem at hand that they perform poorly when it changes...I do not ask how the industry should be regulated or how it should be structured; no one knows the answer, nor would today's good answers today be applicable tomorrow. Instead, my approach is to design industry institutions that are capable of adapting over a wide space of possible solutions. If this can be done, while preserving certain basic protections for disadvantaged or powerless users, then we will have created an evolutionary process that permits participants to create the industry structure they need to solve the problems they face.<sup>20</sup>

Given the nature of the problem, the Commission can best achieve the goal of controlling market power simply by prohibiting pipelines from withholding capacity, requiring that they furnish sufficient information for verification, and expanding the fungibility and transferability of capacity rights. Individual pipelines should have the option of proposing alternative mechanisms that allow them to offer customized services and terms to customers who desire them. Pipelines and other capacity owners should be

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<sup>17</sup> Crandall and Ellig, *supra* note 1 at 29-30; Robert Crandall, *After the Breakup: US Telecommunications in a More Competitive Era* (Brookings, 1991), and R. Crandall and Jonathan Galst, "Productivity Growth in the Telecommunications Industry Since 1984," in P.T. Harker (ed.), *The Service, Productivity, and Quality Challenge* (Kluwer, 1995), 391-406.

<sup>18</sup> Rally D. Banker and Holly H. Johnston, "An Empirical Study of Cost Drivers in the Airline Industry," *Accounting Journal* 68 (1993); Jan K. Brueckner, Nichola J. Dyer, and Pablo T. Spiller, "Fare Determination in Airline Hub-and-Spoke Networks," *Rand Journal of Economics* 23:3 (Autumn 1992), 309-33; US Department of Transportation, *The Low Cost Airline Service Revolution* (1996); John R. Meyer and Clinton V. Oster, Jr., *Deregulation and the New Airline Entrepreneurs* (MIT Press, 1984), Ch. 4; Donald J. Boudreaux and Jerry Ellig, "Beneficent Bias: The Case Against Regulating Airline Computerized Reservation Systems," *Journal of Air Law and Commerce* 57 (Spring 1992).

<sup>19</sup> Clifford Winston, Thomas M. Corsi, Curtis M. Grimm, and Carol A. Evans, *The Economic Effects of Surface Freight Deregulation* (Brookings, 1990).

<sup>20</sup> Arthur S. De Vany, "A Brave New World: Private Contracting as a Regulatory Alternative," in J. Ellig and J. Kalt (eds.), *New Horizons in Natural Gas Deregulation* (Praeger, 1996) at 211.

free to continually experiment with different types of exchange institutions, as long as the pipelines can demonstrate that they lack either the ability or the incentive to withhold capacity. This approach would prevent the exercise of market power without cementing into place one single design for market institutions.

In short, to encourage maximum efficiency in the initial selection and ongoing evolution of exchange institutions, pipelines should have three choices:

- 1) Sell all capacity through auctions.
- 2) Sell all capacity in any other way that allows FERC to verify that capacity is not being withheld.
- 3) Implement auctions for market participants who want them, but also offer capacity through other exchange mechanisms.

#### 4. Disclosure of transaction information

The Commission should also be aware that full disclosure of information about transactions, though intended to combat price discrimination, may actually facilitate the exercise of market power. Faced with full disclosure, an individual pipeline may offer less generous terms because it knows it will face pressure to offer the same terms to other customers. In addition, full disclosure can facilitate collusion, actually making customers worse off.

The potential costs of full disclosure are not just a matter for speculation. In the railroad industry, there is evidence that disclosure of contract rates for grain, mandated by Congress in 1986, resulted in higher grain rates on routes where shippers had no transportation alternatives to the railroads. Forced to disclose the terms of individual contracts, railroads found it easier to collude. Where railroads faced barge competition, on the other hand, the disclosure requirement seems to have lowered grain rates.<sup>21</sup>

In a concentrated market, mandated disclosure of transaction terms runs the risk of facilitating collusion. In an unconcentrated market, on the other hand, mandated disclosure cannot arguably reduce market power, because there is no market power to begin with. In such a case, mandated disclosure can only be justified if the informational efficiencies outweigh the costs of publicizing the information.

The Commission's justification for disclosure appears to be based not just on a desire to reduce information costs, but more particularly on a desire to prevent undue

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<sup>21</sup> John Schmitz and Stephen W. Fuller, "Effect of Contract Disclosure on Railroad Grain Rates: An Analysis of Corn Belt Corridors," *Logistics and Transportation Review* (June 1995), 97-124; S. Fuller, F. Ruppel, and D. Bessler, "Effect of Contract Disclosure on Price: Railroad Grain Contracting in the Plains," *Western Journal of Agricultural Economics* 15:2, 265-71.

price discrimination.<sup>22</sup> Price discrimination is a danger only when some sellers possess market power. But a market in which sellers have some market power is precisely the type of market in which mandatory disclosure of contract terms might foster collusion. Given the risk that mandated disclosure poses to consumer welfare, it would be more efficient for the Commission to avoid such mandates and instead encourage competitive capacity resale to combat price discrimination.

### *5. The bottom line*

The Commission's proposed changes in the short-term market would most likely be an improvement over current price regulation. However, not all of the changes are necessary to prevent the exercise of market power. The Commission can best serve the public interest by focusing exclusively on this objective. Instead of mandating a single auction approach, the Commission would do better to leave exchange institutions free to evolve in ways that minimize transaction and information costs.

## III. LONG-TERM MARKET ISSUES

The Commission's proposals and inquiry into the long-term market assume that this market is not competitive, and therefore cost-of-service regulation will remain.<sup>23</sup> Scholarly research, however, suggests that monopoly may be the exception rather than the rule in the long-term market. In addition, experimental economics research shows that there are more market-based means of controlling market power than cost-of-service regulation. Finally, an examination of best regulatory practices in industries with economic similarities to interstate gas transmission reveals that there are ways of dealing with pockets of monopoly without subjecting the entire industry to burdensome cost-of-service regulation.

### *1. Is there a market failure at all?*

An extensive body of empirical research demonstrates that natural gas markets in the United States are now highly integrated. These studies typically analyze the effectiveness of open access by correlating gas prices in field, pooling area, and citygate markets around the country. If all gas prices move together, that is a sign that it is easy to substitute one gas supply for another.<sup>24</sup>

Most major pipelines became open access transporters by 1987. Gas prices in the nation's five major producing regions, which previously moved independently of each

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<sup>22</sup> E.g., NOPR at 14.

<sup>23</sup> NOPR at 29.

<sup>24</sup> For a review of this literature, see Robert J. Michaels and Arthur S. De Vany, "Market-Based Rates for Interstate Gas Pipelines: The Relevant Market and the Real Market," *Energy Law Journal* 16 (1995) at 325-29.

other, began to move in concert during that year.<sup>25</sup> By 1990, natural gas prices at different locations all across the country moved virtually in lockstep.<sup>26</sup> Because of these changes, the nation's gas pipelines look much less like a set of drinking straws connecting specific origins and destinations. Instead, the pipeline network looks more like a big bathtub that suppliers and customers fill and draw from. Markets at most every point in the network are connected, directly or indirectly, with other markets.

In such a network, successful monopoly pricing requires collusion among a very large number of pipelines, which is highly unlikely.<sup>27</sup> Two researchers who have performed a great deal of the published analyses of gas price movements note:

Although some links do become congested, there is no evidence of bottleneck monopolies in the price data. Prices are highly correlated over all vertices, near and far, and there is no evidence that prices at vertices served by only one or two pipelines are less correlated than prices at vertices served by three or more pipelines.<sup>28</sup>

The NOPR acknowledges that gas markets have become highly integrated and competitive:

[M]any short-term decisions are based on the delivered price for gas (including transportation) on a daily basis. Often narrow differences in delivered prices may affect shippers' decisions...

The existence of a market price for gas at all points along the pipeline grid has created a market-driven value for transportation between receipt and delivery points. In effect, the implicit value of transportation between two such points is the spot price of gas at the delivery point minus the spot price of gas at the receipt point.<sup>29</sup>

Despite this admission, the Commission states that the mere presence of integrated gas markets does not prove that the market for long-term gas transportation is competitive.<sup>30</sup> This is true only under certain circumstances. It is possible that arbitrage opportunities across locations for the gas commodity may be quickly competed away, while all shippers pay monopoly prices for transportation. This scenario is likely, however, only if all pipelines can enforce collusion on rates. There is no evidence that pipelines on their own initiative collude on rates, although rate regulation by the Commission may facilitate such collusion.

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<sup>25</sup> De Vany and Walls, *supra* note 7 at 86.

<sup>26</sup> De Vany, *supra* note 19 at 213-17.

<sup>27</sup> Michaels and De Vany, *supra* note 23 at 330.

<sup>28</sup> De Vany and Walls, *supra* note 7 at 94.

<sup>29</sup> NOPR at 14-15.

<sup>30</sup> NOPR at 17-18.

Integrated gas markets, *combined with* the actual structure of property rights that exists in gas transportation today, arguably make most gas transportation markets workably competitive. Integrated gas markets mean that pipelines are no longer monopolists over pairs of origins and destinations; they are competitors at both origins and destinations. A pipeline that does not price its transportation competitively risks losing business in its destination markets to other pipelines that transport gas from either the same or different origins.<sup>31</sup> In similar fashion, a pipeline facing competition in destination markets has a limited ability to earn monopoly rents by reducing producer netbacks, as long as producers have access to one or more alternative pipelines.<sup>32</sup>

Competitive constraints include more than just other pipelines serving the same origins or destinations. Potential competition and the short-term market also serve to discipline monopolistic behavior in the long-term market.

## 2. Potential Competition

A study by Edward Gallick that is no doubt well-known at the Commission demonstrated that concentration in pipeline destination markets declines dramatically if one includes as potential competitors pipelines that could enter new markets economically within two years. In 129 destination markets, representing 87 percent of gas sales, the presence of such potential entry lowers the Herfindahl Index below 2500, the level used by the Department of Justice to determine if an oil pipeline market is competitive. The study's author concluded, "any competitive analysis of the natural gas pipeline industry that ignores the competitive effect of potential entry is likely to suggest market power concerns where none, in fact, exist."<sup>33</sup> Gallick's results likely understate the competitiveness of today's gas transportation markets, as the study is based on data from the 1980s, before many new pipeline construction projects were completed.

Even studies such as Gallick's may underestimate the ease of potential entry. Analysts examining potential entry usually consider sunk construction costs to be the principal barrier of concern. In economic theory, sunk costs create a barrier to entry because the new entrant must have a reasonable chance of covering its sunk costs before

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<sup>31</sup> Analysis of competition at destination markets is common practice in the study of pipeline competition. This approach is taken in a study of gas pipeline competition by Edward C. Gallick, *Competition in the Natural Gas Pipeline Industry* (Westport, CT; Praeger, 1993) and by the U.S. Department of Justice in its study of oil pipeline competition, *Oil Pipeline Deregulation* (May 1986).

<sup>32</sup> Though we mention producer netbacks, it is important to note that economic efficiency and consumer welfare depend solely on the extent to which competition constrains pipelines' ability to raise prices paid by downstream customers. Arguments over netbacks are fundamentally arguments over economic rents or wealth distribution, not economic efficiency. For a distinction between rents and efficiency, and discussion of the consequences when regulators abandon an exclusive focus on consumer welfare and get involved in the allocation of rents, see James M. Buchanan, Robert D. Tollison, and Gordon Tullock, *Toward a Theory of the Rent-Seeking Society* (1980).

<sup>33</sup> Gallick, *supra* note 31 at xii. Gallick's results are all the more impressive in that they utilize data from the mid-1980s. Since then, entry has occurred in a number of markets, and FERC has reduced regulatory barriers faced by potential entrants as well.

it will enter a market, whereas the incumbent need only cover its variable costs to remain in the market.<sup>34</sup> In situations involving natural monopoly or “lumpy” additions to capacity, the potential entrant thus faces substantial risk that it will not be able to cover its sunk costs, since it might not capture enough of the market to make construction and other sunk costs of entry worthwhile.

Sunk construction costs, however, need not deter entry if the entrant can obtain assurances that it will capture enough of the market to earn a profit. The prospective entrant can bid for and sign up enough of the market to make its project profitable, even if such competition for the market imposes losses on the incumbent. The most straightforward way of accomplishing this is through contracting with customers, and this is in fact what some potential entrants have done. In Southern California, for example, the new entrant Mojave and Kern River pipelines identified customers who pledged to switch from their current suppliers – the California gas utilities – if the new pipelines were built. The sunk costs associated with building new pipelines did not deter the entrants; it was clearly certification procedures, not sunk costs, that threatened to prevent entry.<sup>35</sup>

Contracting with a potential entrant can protect customers from a pipeline’s monopoly power even if the new pipeline is never built. The potential entrant’s contract offers force the incumbent monopolist to offer better prices and contract terms.<sup>36</sup> Again Southern California provides an example. Mojave Pipeline proposed its Northward Expansion to serve a number of large customers unhappy with the service they were receiving from Pacific Gas & Electric. Mojave signed contracts with a number of customers. PG&E responded by offering the target customers contractual guarantees of lower rates, even though the Mojave expansion was not yet in place. Mojave’s expansion was never built, but the threat of construction constrained PG&E’s monopoly power over the customers Mojave proposed to serve. The reason Mojave could mount a credible threat was that the sunk costs of contracting with customers were low. The largest possible estimate of contracting costs was \$21 million – a large figure, but less than 5 percent of the total sunk costs of the project. Therefore, the conventional approach of viewing total sunk costs as the entry barrier overestimates the extent of the barrier by a factor of 20!<sup>37</sup>

For these reasons, potential competition is a potent force constraining monopoly power in long-term gas transportation.

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<sup>34</sup> William Baumol, John Panzer, and Robert Willig, *Contestable Markets and the Theory of Industry Structure* (Harcourt Brace Jovanovich, 1982).

<sup>35</sup> See generally FERC Docket CP89-1; H.G. Broadman and J.P. Kalt, “How Natural is Monopoly? The Case of Bypass in Natural Gas Distribution Markets,” *Yale Journal on Regulation* (1989); Jerry Ellig, “Why Do Regulators Regulate? The Case of the Southern California Gas Market,” 7 *J. of Reg. Econ.* 293 (1995).

<sup>36</sup> R. Posner, “The Appropriate Scope of Regulation in the Cable Television Industry,” 3 *Bell J. of Econ.* 98 (1972) at 112.

<sup>37</sup> Jerry Ellig, Jeff Kaufman, and Tom Rustici, “When Do Sunk Costs Prevent Entry? The Case of Gas Pipelines,” manuscript, George Mason University (March 17, 1995).

### 3. The Short-Term Alternative

Capacity sold in competitive short-term markets also competes successfully against long-term capacity offered by pipelines. In the short-term market, the only way a pipeline can exercise market power is by withholding capacity – which current and proposed Commission rules would prevent. Even a pipeline that initially held the rights to 100 percent of its capacity could not charge monopoly prices under these rules. If such a pipeline sought to charge a monopoly rate for long-term transportation, customers could avoid the monopoly price by refusing to buy, forcing the pipeline to sell the capacity in the short-term market. Since the Commission would require the pipeline to sell all of the capacity, price would be pushed down to the competitive market level.

Some might argue that short-term transportation is not a good substitute for long-term transportation, because there is no guarantee that the capacity will be available in the future. While this may be true in some cases, short-term transportation is a good substitute for long-term transportation in the monopolization scenario presented above. As long as the pipeline tries to charge a supra-competitive price in the long-term market, it will have spare capacity that it must sell in the short-term market. Absent a sudden increase in demand, capacity would become unavailable in the short-term market only if the pipeline sold all of the capacity in the long-term market – which it could not do without reducing the long-term price to the competitive level. If there is a monopoly problem, there is no short-term capacity problem; if there is a short-term capacity problem, there is no monopoly problem.

There is another, more fundamental reason that short-term capacity is a good substitute for long-term capacity: long-term capacity contracts themselves may be an outmoded artifact of regulation. Long-term contracts help protect producers and consumers when each pipeline enjoys a monopoly over transportation between specified producing and consuming regions. But in a world of competing pipelines and multiple capacity holders, the typical shipper can opt for competitively-priced transportation and hedge against price risks in derivatives markets:

Under open access, long-term requirements contracts become the exception. The producer now faces a nation of alternative buyers reachable by pipelines that cannot refuse to provide service. The LDC has a similar richness of competitive gas suppliers. If both parties have the abundant alternatives of competition, each will probably prefer short-term transactions, hedged according to their individual preferences. The long-term fixed-price LDC contracts that remain are overpriced insurance policies that persist because LDCs can transfer their risks to captive end-users.<sup>38</sup>

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<sup>38</sup> Michaels and De Vany, *supra* note 23 at 342; Robert J. Michaels, “Reducing Risk, Shifting Risk, and Concealing Risk: Why Are There Long-Term Gas Contracts?,” in J. Ellig and J. Kalt (eds.), *New Horizons in Natural Gas Deregulation* (Praeger, 1996), 195-208.

The foregoing discussion assumes that there is an adequate amount of capacity in the market to meet all demand at a competitive market price. If there is not sufficient capacity, a pipeline could try to manipulate both the short-term and the long-term market by refusing to expand capacity. The Commission has two remedies here. First, for larger increments of capacity, the Commission can encourage competitive entry if existing firms are unwilling to supply the capacity customers desire. Second, the Commission can prohibit the pipeline from refusing to build new capacity when customers are willing to sign contracts that cover the full cost of the expansion. The relevant “customer” need not be a shipper; it could even be an arbitrageur who believes there will be a demand for the capacity in the future and is willing to shoulder the risk of holding the capacity until someone uses it.

If pipelines cannot withhold capacity from the long-term market and resale of capacity is easy, then market power is constrained. Price must fall to the competitive level, because the pipeline in effect is forced to produce the level of output it would produce in a competitive market. Easy resale of capacity, meanwhile, ensures that undue price discrimination will not occur.

Actual experience reveals that pipelines have willingly expanded capacity in the open access era. There is substantial evidence that pipelines are behaving in a competitive fashion that increases the number of interconnections in the network, thus expanding options for customers. Since the advent of open access, pipelines have announced and completed significant new construction projects, including development of and interconnection at market hubs, which gives shippers and consumers access to numerous transportation options. Observing this scene, two prominent commentators note, “The behavior of both gas prices and pipeline rates provides abundant evidence of competition and little evidence of monopoly power...If pipelines already operate in competitive markets, controlling their rates at historical cost of service (or any other amount) is more likely to inhibit the forces of competition than to temper the forces of monopoly.”<sup>39</sup>

For all of these reasons, the Commission should reconsider its traditional approach of assuming that market power exists unless a market is proven to be competitive.

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<sup>39</sup> Michaels and De Vany, *supra* note 23 at 332.

#### 4. Implications of the Auction Literature

Experimental economic research, funded in part by the Commission during the 1980s, suggests that it is possible to design auctions that yield competitive outcomes for pipeline networks similar to those which actually exist in the US today.

Of particular note is a study that examines outcomes in a pipeline network where property rights over each leg of pipe are held by a single owner. Alternative pipeline paths connect some locations but not others. The researchers note, “The network we study experimentally is thin, and weakly competitive. In this sense it is intended as a worst-case example for any price mechanism.”<sup>40</sup> They found that a computer-assisted auction market could adequately control monopoly power:

[W]e find nothing inherently monopolistic about pipelines except in those parts of the networks served by only one pipeline. Even in these cases bargaining appears to be sufficiently symmetric to yield outcomes that do not disadvantage buyers.<sup>41</sup>

Other auction designs in this research program focused on pipeline networks in which different parties have ownership and control over shares of capacity in the same pipeline. Because these capacity holders compete with each other, an auction leads to workably competitive results, even when economies of scale limit the number of pipelines between different locations.<sup>42</sup> Such shared ownership solutions offer a more efficient alternative to cost-of-service regulation.<sup>43</sup>

Shared ownership of pipelines may appear a radical solution. However, regulation approximates some of the effects of shared ownership by making capacity rights more fungible and fully tradable. Capacity holders may not have an equity stake in pipelines, but control over the pipeline’s capacity is effectively divided up among many competing users.

The auction literature holds two implications for the Commission’s regulation of the long-term market.

First, if the Commission believes the long-term market is not competitive, auctions for long-term capacity can promote competitive outcomes and eliminate the need for cost-of-service regulation. Of course, the same caveats apply to long-term capacity auctions that apply to short-term capacity auctions: not all customers may want standardized transportation services, and there is no guarantee that an auction mechanism required by

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<sup>40</sup> McCabe, Rassenti, and Smith (1989), *supra* note 10 at 260.

<sup>41</sup> *Id.* at 283.

<sup>42</sup> Rassenti, Reynolds, and Smith, *supra* note 10; McCabe, Rassenti, and Smith (1990 and 1991), *supra* note 10.

<sup>43</sup> For a specific proposal, see Dan Alger, “The Scope of Deregulation for Natural Gas Pipelines and the ‘Workable Competition’ Standard,” in J. Ellig and J. Kalt, *New Horizons in Natural Gas Deregulation* (Praeger, 1996), 85-106.

regulation will evolve to meet changing market needs in a timely fashion. However, the long-term capacity auctions outlined above would likely be an improvement over cost-of-service regulation. To maximize options and the evolvability of exchange institutions, the Commission could institute long-term capacity auctions as a default mechanism, but also allow pipelines and capacity holders to make transactions in any other mutually agreeable way. Anyone seeking capacity would thus always have the auction as an option, and resale of capacity rights would allow the market to self-police against undue price discrimination.

Second, the auction literature can also be interpreted in a different light that suggests the Commission can dispense with cost-of-service regulation without mandating a single approach to auctions. Experimental auctions are not just mechanisms that aid in the conscious design of trading institutions, but also simplified representations of what real-world markets accomplish. The auction is a metaphor for many real-world markets that do not necessarily take the auction form. If the fundamental assumptions of the auction models are met in reality – pipeline capacity controlled by multiple parties, reasonably good information, and relatively low transaction costs – then the market is likely to behave competitively, even in the absence of a formal auction mechanism.

#### IV. TOWARD BEST REGULATORY PRACTICES

The gas transportation industry may be largely competitive, with some pockets of monopoly. In this case, the Commission need not apply cost-of-service regulation to the entire industry. Instead, it can employ light-handed regulation for most markets, retaining some form of cost-based regulation only for those markets where monopoly demonstrably exists.

##### 1. What are the best practices?

Fortunately, we can learn from the practices of other regulatory bodies that have accommodated themselves to widespread competition. The two most helpful examples are the Interstate Commerce Commission's (now Surface Transportation Board's) regulation of railroads under the Staggers Act of 1980, and the Texas Railroad Commission's regulation of intrastate gas transmission.

**Federal railroad regulation.** By the 1970s, federal regulation had bankrupted many railroads. Railroads faced intensified competition from trucking firms, but had little ability to respond because the Interstate Commerce Commission mandated “value of service” pricing. In effect, this policy forced railroads to charge higher rates on “high-value” shipments of manufactured goods – precisely the goods for which truckers were most suited to compete. In addition, regulations intended to ensure near-universal rail service made it difficult for railroads to abandon service on unprofitable routes.

The Staggers Act of 1980 reversed decades of federal railroad policy. The federal government still reserved the right to regulate rates charged to “captive shippers,” but rates on about 90 percent of all rail traffic are now market-based. A shipper’s rates are now deregulated if:

- The railroad and shipper sign a contract,
- Railroads generally face competition for the types of goods or shipments the shipper generates,
- The railroad faces competition for that shipper’s traffic, or
- The shipper pays less than 180 percent of its incremental cost.

If a captive shipper challenges a rate, the regulatory body may still declare it reasonable – and the ICC often upheld challenged rates if the railroad was earning less than its cost of capital or the rate was below the shipper’s stand-alone cost.

**Regulation of Texas intrastate pipelines.**<sup>44</sup> The Cox Act gives the Texas Railroad Commission authority to regulate the entire Texas gas industry. The Act charges the Commission with establishing and enforcing “fair and reasonable rates and charges and regulations for transporting, producing, distributing, buying, selling, and delivering gas by such pipe lines in this state...” The Railroad Commission’s broad grant of authority rivals, and in some cases exceeds, the authority that FERC holds under the Natural Gas Act, but several aspects of Railroad Commission regulation differ substantially from FERC’s practices.

For gas transmission, the Railroad Commission’s system seems based on the assumption that pipelines are not monopolies, but may serve some monopoly markets. The Commission reviews prospective construction plans, but principally for safety considerations. Neither existing firms nor potential entrants need to prove a need for their service to enter the market, and they are at risk for the full amount of their investments.

Texas regulators also employ market-based pricing for most gas transmission. Voluntary negotiation sets most transmission rates. For industrial customers, large commercial customers, and other pipelines, rates are considered fair and reasonable if there is competition, rates are similar to other rates in the area, and neither party had an “unfair” advantage in negotiations. Alternative pipelines and alternative fuels both count as sources of competition. Customers can file complaints about their rates, but they frequently waive this right in negotiated contracts.

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<sup>44</sup> This section draws heavily on J. Ellig and M. Giberson, “Scale, Scope and Regulation in the Texas Gas Transmission Industry,” 79 *Journal of Regulatory Economics* 5 (March 1993).

About the only transmission prices not subject to market-based rates are transactions involving city-gate sales to local distribution companies.<sup>45</sup> These prices are based on costs. Pipelines allocate fixed costs among customers based on peak day demand and variable costs based on volumes. The pipeline's cost structure, though, is basically determined in the competitive market. One commentator noted, "The Railroad Commission depends on competition for industrial sales to force the pipeline to make prudent decisions on investments and gas purchase costs."<sup>46</sup>

Parties also have a great deal of contracting freedom. Pipelines can sell bundled or unbundled service, and firm or interruptible service. Contract lengths are negotiable. Neither common nor contract carriage are required, but transportation accounts for about two-thirds of pipeline throughput.<sup>47</sup>

## 2. What can we learn?

The regulatory regimes for railroads and Texas intrastate gas pipelines have both generated substantial benefits for consumers. The Staggers Act lowered real rail rates on most commodities by 15-25 percent, saved shippers \$11-18 billion annually due to lower rates and more timely service, and staved off a massive taxpayer bailout of an industry that was a financial basket case. Texas intrastate pipelines enjoy a lower cost structure and charge lower rates than FERC-regulated pipelines of similar length.<sup>48</sup> These two systems share some similarities that can help guide federal regulation of interstate gas transmission in the new millennium. Key features include:

- Open entry, with no "certification" requirements allowing competitors to challenge the need for the proposed service.
- Investors are at risk for all investments.
- Liberal definitions of competition, which focus on the existence of competitive options rather than measuring market shares in narrowly-defined, point-to-point markets.
- A willingness to consider the role of downstream competition in mitigating the ultimate effects of the regulated firm's market power on consumers. This approach is consistent with an awareness that many market power disputes

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<sup>45</sup> About 85 percent of gas in Texas is consumed by industrial and electric utility customers, compared to only 8 percent by residential customers. See *Id.*

<sup>46</sup> J. Rodney Lemon, "Regulatory Reform of Interstate Natural Gas Pipelines," *Contemporary Policy Issues* 4:4 (Oct. 1986) at 98.

<sup>47</sup> Jerry Ellig, "Intrastate Pipeline Regulation: Lessons from the Texas Experience," in J. Ellig and J. Kalt, *New Horizons in Natural Gas Deregulation* (Praeger, 1996) at 168.

<sup>48</sup> Results of the Texas pipeline regulatory system are discussed *Id.* at 166-68. For a comprehensive survey of academic literature on the effects of railroad deregulation, see J. Ellig, "Railroad Regulation and Consumer Interests," CSE Foundation *Issue Analysis* No. 74 (Aug. 24, 1998).

involving large firms on both sides principally affect the distribution of economic rents, not the welfare of the ultimate consumers.

- In practice, most of the firm's operations are not subject to cost-of-service regulation, avoiding the perverse incentives created by such regulation.
- The small proportion of regulated prices reflect marginalist pricing principles, permitting (but not requiring) recovery of variable plus a share of fixed costs.
- Wide scope for private contracting over prices and terms of service.
- Freedom to introduce new services at market-based rates as market conditions require.

## V. CONCLUSION

Economic research suggests a number of results that could make a significant difference in the Commission's approach to regulation of short-term and long-term gas transportation:

- There is substantial evidence that both short-term and long-term gas transportation markets are workably competitive, or could become so with some changes in regulation that would make capacity rights more fungible and transferable.
- If some market power exists, it is sufficient that the Commission prevent participants from withholding capacity from both the short-term and long-term markets to ensure a competitive outcome.
- A mandate that all short-term trades must occur through auction markets of some particular design could prevent the evolution and development of the most efficient exchange institutions.
- If pockets of market power exist in the long-term market, federal railroad regulation and Texas intrastate pipeline regulation demonstrate how to deal with such pockets while leaving most of the industry free from cost-of-service regulation.

Though these comments have been critical of some of the Commission's proposals and assumptions, there are many strengths in the Commission's approach. The Commission clearly recognizes the inefficiencies created by price caps in the short-term market and rate-of-return regulation in the long-term market. The NOPR and the NOI are both evidence of a search for more market-based means of carrying out the Commission's statutory responsibilities. We commend the Commission for its efforts and hope these comments will assist the Commission in its quest to regulate firm behavior by means of competitive markets.

## Appendix 1

### RSP Checklist

#### FERC Gas Pipeline Short-Term Transportation Rulemaking and Long-Term Transportation Inquiry

Element	Commission Approach	RSP Comments
1. Has the Commission identified a significant market failure?	<p>FERC argues that cost-based regulation in the market for short-term gas transportation is no longer necessary, as long as certain rules are in place to mitigate residual market power. Cost-of-service regulation is still believed necessary in the long-term market, and FERC seeks to design auction processes to minimize transaction costs.</p> <p><b>Satisfactory</b></p>	<p>FERC’s assessment of the short-term market is largely accurate, but some law and economics research suggests that monopoly is a much smaller problem in the long-term market than FERC believes. FERC could probably achieve “just and reasonable” long-term prices by relying on competition. It is also unclear if transaction costs alone are sufficiently high to justify a government-designed auction system. Overall, the Commission has framed the issues in a way conducive to rational discussion about the presence or absence of market failure.</p>
2. Has the Commission identified an appropriate federal role?	<p>FERC justifies the proposed rules as a more appropriate way to ensure that prices are “just and reasonable” under the Natural Gas Act of 1938.</p> <p><b>Good</b></p>	<p>The rulemaking covers interstate transmission of natural gas, which is clearly in interstate commerce.</p>

Element	Commission Approach	RSP Comments
3. Has the Commission identified alternative approaches?	<p>The Commission briefly examines and rejects two alternative regulatory approaches: separate proceedings to ascertain the extent of market power in each short-term market, and cost-of-service rates that vary seasonally. FERC also solicits comments on some other ideas, including some that involve less regulation, and invites commenters to propose alternatives.</p> <p><b>Good</b></p>	<p>Alternatives are not extensively analyzed in the NOPR, but it is clear that FERC has at least considered them. Especially noteworthy is the Commission’s repeated invitations for commenters to propose alternative approaches or provide additional analyses of alternatives.</p>
4. Does the Commission attempt to maximize net benefits?	<p>FERC estimates that its proposals will cost an additional \$4.6 million in annualized data-gathering costs, and the NOPR suggests why the proposed approach is more economically efficient than FERC’s current approach. There is no quantitative analysis of the broader costs or benefits, no quantitative analysis of costs and benefits of alternatives, and no analysis showing that the benefits of FERC’s proposal outweigh the costs.</p> <p><b>Fair</b></p>	<p>FERC’s syllogism seems to be, “Competitive markets are superior to regulation; therefore, a move toward more competitive markets must produce greater net benefits than current regulation.” Economic research on competition suggests that this is true. However, it is not clear whether FERC’s proposed approach is the least regulatory option consistent with its legislative mandate, or that this proposal offers the greatest difference between the total benefits and costs of regulation.</p>
5. Does the proposal have a strong scientific or technical basis?	<p>FERC argues that current market conditions require less extensive regulation to prevent the exercise of market power. This continues FERC’s 15-year trend of seeking to replace administrative rate-setting with competition.</p> <p><b>Good</b></p>	<p>FERC’s approach fits in the mainstream of economic research on competition and monopoly, but reasonable and respected researchers would argue that FERC could be even more market-based.</p>

Element	Commission Approach	RSP Comments
6. Are distributional effects clearly understood?	<p>FERC is very focused on ensuring that the proposed changes do not disadvantage “captive” customers and customers paying for long-term transportation.</p> <p><b>Fair</b></p>	<p>It is not clear that protecting these customer classes is synonymous with protecting consumer welfare. The price structure that maximizes overall consumer welfare may entail greater price differentials among customers than FERC is willing or able to permit.</p>
7. Are individual choices and property impacts understood?	<p>FERC seeks to maximize options available to customers, even if it means allowing capacity holders to appropriate the value of the pipeline’s capacity. The Commission also asks whether it should apply less scrutiny to capacity expansions that will not require use of eminent domain.</p> <p><b>Good</b></p>	<p>The Commission is quite sensitive to protecting customer choice and expresses a degree of concern for landowner rights. Property rights of pipeline companies are defined by the traditional regulatory model; they are of concern only if a pipeline is threatened with a risk that it will not be able to recover its costs.</p>