NRRI 00-09

REGIONAL TRANSMISSION ORGANIZATIONS AND THE COORDINATION OF REGIONAL ELECTRICITY MARKETS: A REVIEW OF FERC ORDER 2000

Kenneth W. Costello

and

Robert E. Burns

THE NATIONAL REGULATORY RESEARCH INSTITUTE
THE OHIO STATE UNIVERSITY
1080 Carmack Road
Columbus, Ohio 43210-1002
Phone: 614/292-9404
Fax: 614/292-7196
Website: www.nrri.ohio-state.edu

April 2000

This report was prepared by The National Regulatory Research Institute (NRRI) with funding provided by participating member commissions of the National Association of Regulatory Utility Commissioners (NARUC). The views and opinions of the authors do not necessarily state or reflect the views, opinions, or policies of the NRRI, NARUC, or NARUC member commissions.

PREFACE

Innovative structures to operate transmission grids are the newest chapter in restructuring of the U.S. electric power industry to increase competition and reduce rates. The Federal Energy Regulatory Commission (FERC) late in 1999 issued a voluminous order promoting the creation of regional transmission organizations (RTOs) to provide nondiscriminatory open access to transmission.

This report is a straightforward summary of FERC Order 2000, and is thus intended as a briefing book for state regulatory commissions and others in the regulatory community. It also represents the first phase of NRRI research into the development of RTOs throughout the country. An NRRI report slated for this summer will focus on key issues and seek to identify "best practices" that are emerging from efforts to create and sustain various forms of RTOs. In doing so, we will use direct input from existing independent system operators (ISOs) and from participants in markets they manage.

To kick off Order 2000, the FERC organized five regional workshops attended by self-identified stakeholders, including transmission-owning utilities, marketers, brokers, generators, industrial and commercial users, residential consumer groups, the state commissions, and other interested parties. While encouraging the formation of RTOs, the FERC has made it clear that implementation is up to the regions. State regulatory commissions generally support the voluntary use of RTOs to make sure that owners of transmission lines who also own generation do not find ways to favor their own power supplies.

ISOs, which are one form of RTO, are already operating in the Mid-Atlantic, New England, New York, and California power markets. The Northeast is well along not only in establishment of ISOs but in the next stage of the huge enterprise of electric industry restructuring–development of an inter-regional coordination organization that comprises all the East Coast from Maryland northward. Other regions have much to learn from PJM Interconnection, which has evolved from the oldest power pool in the world to become an ISO in 1998; from the New England ISO; and from the New York ISO. The three ISOs have developed a memorandum of understanding that is taking them towards regionalization of the country's most densely populated power markets.

The leadership of the three ISOs met in Washington, D.C., April 11 to compare notes, discuss progress and keep planning. Attending as well were representatives from Ontario's IMO (Independent Electricity Market Operator), selected state regulatory commissioners and staff and others. Barry Spector of the Washington firm of Wright and Talisman noted the ground-breaking importance of the group's undertaking, saying inter-regional coordination is the next frontier in construction of RTOs and the Northeast has a big head start over most of the rest of the country. Order 2000 sets out a dozen expectations for what a well-running RTO will look like and accomplish, as the reader of this report will find. The three ISOs assessed their status vis-a-vis some of the characteristics and functions set forth in Order 2000. PJM President Phil Harris said that his company, which serves Pennsylvania, New Jersey, Maryland, the District of Columbia, Delaware, and a small part of Virginia, is functioning on all the cylinders identified by the FERC. He suggested that two issues facing the ISO are incentives for transmission owners to build new transmission and development of estimates of the demand side response to price. William J. Museler, President of the New York ISO, focused on challenges in the planning

arena and assurance of independence. Phil Pellegrino, President of the New England ISO, also expressed concern about the degree to which the operator's governance fulfills the FERC's idea of independence. He noted other challenges in the areas of tariff administration and design and congestion management.

Of particular interest to the states, and an area that was not much discussed at the April 11 meeting, is state oversight and jurisdiction. How much is needed? How can it be exercised to promote competition, assure reliability, and assure expansion?

Publication of Order 2000 marks the end of a policy debate on the federal level on whether RTOs should be established to reduce inefficiencies in transmission that might result from greater wholesale competition on the generation side of the electric industry. The answer to that question is "yes." It marks the birth of debate and experimentation with the precise forms of RTOs, whether they be ISOs, transcos (in which the transmission company itself is independent), or some hybrid of the two. It marks the birth of debate and experimentation with the size, scope, governance, and capabilities of RTOs across the country. State commissions in areas where existing RTOs grow and mature, as well as state commissions in regions that are just beginning the RTO development, have much to learn and do, not only in RTO formation but in assuring successful RTO operation that provides retail customers with safe and reliable market-based services.

EXECUTIVE SUMMARY

The Federal Energy Regulatory Commission (FERC), on December 20, 1999 issued FERC Order 2000 to encourage all transmission owners to voluntarily join regional transmission organizations (RTOs).[1] According to the FERC, the major purpose of the order is to mitigate the engineering and economic inefficiencies inherent in the current transmission system and perceived or real discrimination by transmission owners.[2] In 1996, the FERC issued Orders 888 and 889 in order to provide non-discriminatory open-access on the transmission system.[3] While open-access to transmission was achieved through the filing of *pro forma* tariffs, according to the FERC the existing transmission system has become strained because of the resultant increased wholesale electricity trading in addition to state-mandated retail open access.[4]

---

[1] The Final Rule defines an RTO as "an entity that is independent from all generation and power marketing interests and has exclusive responsibility for grid operations, short-term reliability, and transmission service within a region." See in re *Regional Transmission Organizations*, Federal Energy Regulatory Commission Order No. 2000, mimeo, issued December 20, 1999. The Final Rule can be found on the FERC's website at www.ferc.fed.us/news/rules/pages/RM99-2A.pdf.

[2] Upon rehearing, on February 23rd FERC made only minor changes, largely in the form of some clarifications, to Order 2000. (See FERC's Order 2000-A, dated February 25, 2000.)

[3] As readers may recall, the Notice of Proposed Rulemaking (NOPR) for Orders 888 and 889 was labeled the "Mega-NOPR." A review of the orders is contained in Kenneth Rose et al., *Summary of Key State Issues of FERC Orders 888 and 889* (Columbus, OH: The National Regulatory Research Institute, January 1997). Order 888 included eleven guidelines for the formation of an independent system operator.

[4] In issuing Orders 888 and 889, the FERC acknowledged that *pro forma* open access tariffs and electronic bulletin boards (OASIS) by themselves would not

(continued...)

In Order 2000, the FERC emphasized that it has legal authority to order RTO participation if necessary to remedy documented undue discrimination or anti-competitive problems. This report summarizes Order 2000; further NRRI work will analyze alternative configurations of RTOs.

Specifically, Order 2000:

- **T** States three general principles:
  - to encourage, but not mandate, RTO participation,
  - to refrain from proscribing a particular organizational form as long as the RTO satisfies certain minimum characteristics and functions, and
  - to offer organizers maximum flexibility on how an RTO can satisfy the minimum characteristics and functions.

- **T** Does NOT: (a) require RTO participation, (b) draw regional RTO boundaries, (c) favor independent system operators (ISOs) over transcos (independent, privately-owned transmission-owning companies) or hybrids.

- **T** Articulates as its basic rationale that the performance of the wholesale power market will improve as owners relinquish control of transmission operation.

- **T** Requires that jurisdictional transmission owners or operators, by October 15, 2000, file to be part of an RTO proposal, or alternatively,

---

[4](...continued)
adequately deal with loop flows and pancaked rates along fictitious contract wheeling paths.

describe efforts to participate in an RTO, explain reasons for not doing so, and discuss actions being taken to resolve obstacles to joining an RTO.

- Requires members of existing FERC-approved ISOs, by January 15, 2001, to show whether and how their organizations meet the Order 2000 new RTO standard.

- Sets a goal to have RTOs up and running by December 15, 2001.

- Proposes, in order to help implement the Final Rule, a voluntary and collaborative process (with two-day regional workshops in five locations in 2000) involving all stakeholders to determine, with FERC staff assistance, the optimum size and structure of the RTO.

- As "sticks" to prod utility participation in RTOs, says the FERC will consider on a case-by-case basis requiring RTO participation as a condition for mergers or acquisition approval, as a condition for market-based rate approval, or as a remedy for a discrimination complaint.

- As "carrots" to encourage utility participation in RTOs, says FERC-provided incentives can be justified as necessary in the formation of an RTO, may offer on a case-by-case basis an increased rate-of-return on equity for transmission facilities, performance-based rates, acquisition adjustments (premiums), light-handed regulation, flexible treatment of depreciation, and/or incremental pricing for transmission grid expansion.

- Requires the RTO to demonstrate that it meets *four minimum characteristics* and *eight minimum functions* in order to gain FERC approval.

- **T** Lists four minimum characteristics of an RTO:
  - < Independence
  - < Appropriate geographic scope and regional configuration
  - < Operational authority for all transmission facilities under the RTO's control
  - < Exclusive short-term reliability authority
- **T** Lists eight minimum RTO functions:
  - < Develop and administer transmission tariffs that promote efficient use and expansion of transmission and generation facilities
  - < Develop congestion management procedures
  - < Develop and implement loop flow and parallel path procedures
  - < Serve as the provider of last resort for all ancillary services
  - < Operate a single OASIS (Open-Access Same-Time Information System) for all transmission under its control and be responsible for independently calculating total transmission capacity (TTC) and available transmission capacity (ATC)
  - < Monitor markets to measure market power and market design flaws and propose remedies
  - < Plan and coordinate necessary transmission upgrades and additions, including coordinating its efforts with state regulators
  - < Develop mechanisms to coordinate its activities with other regions, whether or not an RTO exists in those regions, especially concerning reliability and market interfaces
- **T** Strongly encourages state participation in RTO formation, but gives no specific requirements for state participation or authority.

The major changes in the Final Rule from the NOPR issued on May 13, 1999[5] include the following:

- adds requirements for how the RTO decision-making process should be independent of market participants,
- relaxes limits on active ownership by a single market participant (from one percent to five percent),
- requires an RTO to conduct an independent audit to ensure that active owners do not have undue influence over the RTO's activities and passive owners do not have any control,
- adds an interregional coordination requirement as the eighth essential RTO function,
- allows an RTO to plan for and direct construction of new transmission facilities,
- allows an RTO to have exclusive authority to apply for transmission rates,
- changes the definition of a "market participant," and
- proposes specific rules on transmission pricing reform.

The FERC makes an extensive and vigorous argument for why RTOs should be formed throughout the United States. The FERC notes dramatic changes in the electric power industry since the issuance of Orders 888 and 889, and two major problem areas. The alleged problems are undue discrimination of the use of transmission assets and growing difficulties in the operation, planning, and expansion of regional transmission grids.

---

[5] In re *Regional Transmission Organizations*, Federal Energy Regulatory Commission NOPR, Docket No. RM99-2-000, issued May 13, 1999.

In Order 2000, the FERC alludes to a mismatch between current realities and prevailing market institutions, especially for the coordination of short-term system operations. According to the FERC, one important consequence has been growing engineering and economic inefficiencies within traditional transmission-management organizations. The FERC also identifies the problem of decreased incentives of utilities to share information or coordinate operations to protect system reliability. The FERC says that RTOs can correct for these problems, with the biggest challenges centering on calculations of available transmission capacity (ATC), congestion management, and the planning of transmission expansion.[6]

[6] The FERC identified eleven different kinds of benefits from the formation of RTOs, including the elimination of rate pancaking, improved congestion management, and improved grid reliability.

TABLE OF CONTENTS

1. INTRODUCTION

The Federal Energy Regulatory Commission's (FERC) Orders 888 and 889, issued in 1996, reflected the widely held position that increased competition and reduced rates in the electric power industry were desirable; and that the only way to achieve these goals was to fundamentally re-examine the operation and regulation of electric utilities. Subsequent events have caused the FERC to further re-evaluate its rules. General Order 2000 represents the next milestone in the FERC's agenda to create competitive wholesale power markets throughout the United States. Specifically, the order promulgated the Final Rule that encourages all transmission owners to join what the FERC calls regional transmission organizations (RTOs).

This report highlights the major sections of Order 2000. It then identifies major issues for state regulatory commissions. An especially important question is, How does the Final Rule affect the ability of state commissions to have input into the formation, operation, planning, and monitoring of RTOs? This report also speculates on what effect the Final Rule will have on the electric power industry, especially with regard to its organization and performance. The difficulty of this task lies with the high uncertainty of predicting whether the Final Rule will accelerate competition in both wholesale and retail electricity markets.[1] One can only with a low degree of accuracy measure the benefits (if any) to electricity consumers. A general review of the Final Rule in assessing the

[1] The Final Rule may help to promote retail competition by creating a more efficient wholesale power market through the operation of a spot market.

likelihood of consumer benefits and improved industry performance may, however, be useful.

Table 1 identifies several major questions surrounding the Final Rule. This report addresses only those of immediate concern to state regulators, leaving others for another time.

2. OBJECTIVES OF THE FINAL RULE

Under the Final Rule, the FERC says it hopes to create a more competitive and efficient wholesale power market.[2] The FERC believes that this outcome will only be achieved by transmission-owning entities placing their transmission facilities under the control of RTOs.[3] As articulated by the FERC, the goal of the rulemaking is "to form RTOs voluntarily and in a timely manner."[4]

According to the FERC, the Final Rule will lead to the formation of independent regionally operated transmission grids, meaning RTOs, that will push upward the benefits of competitive electricity markets: RTOs will remove the current impediments to efficient grid operation and competition and thereby give consumers a wider choice of services and service providers. For example, improved industry performance is expected to derive from a reduction in

[2] Efficient markets require that production takes place at the lowest possible cost and prices equal marginal cost.

[3] This is unlike the natural gas model where interstate pipelines both own and control the assets; the FERC rationalizes this difference by the fact that the electric power industry is highly vertically integrated.

[4] FERC Order 2000, 8.

TABLE 1

MAJOR QUESTIONS REGARDING THE RTO FINAL RULE

- How will the electric power industry change?
- Will the industry's performance improve? If so, by how much?
- What ability will state PUCs have to provide input into the formation, operation, planning, and monitoring of RTOs?
- Should utilities be expected to join and form RTOs?
- Are the "carrots" and "sticks" sufficiently strong to elicit utility interest in RTO participation?
- Will the collaborative process likely be so contentious and unwieldy that, for some regions, no consensus will be reached over the next several years?
- Do existing ISOs qualify as RTOs?
- Will most RTOs be formed as ISOs, transcos, or a hybrid of the two?
- What innovative pricing methods (if any) will be proposed by RTO members?
- What will the FERC do if there is little participation?
- Will municipalities and federal power utilities participate in RTOs?
- Will the FERC remain the ultimate regulator and arbiter of disputes that cannot be resolved within an RTO? To what extent will RTOs be self-regulating?

Source: Authors' construct.

transaction costs, and the mitigation of information asymmetries and nonmarket-based (that is, inefficient) congestion procedures.[5] Further, in creating RTOs, the FERC says it believes that operational and reliability problems now plaguing the industry will be diminished. Discrimination in transmission services, which acts as a barrier to entry, will also be expected to decline by removing control over the operation of transmission systems from vertically integrated utilities.[6]

3. RATIONALE FOR THE FINAL RULE

The FERC lays out an extensive argument in support its Final Rule. Most fundamentally, it points to the changes in the electric power industry since Orders 888 and 889.[7] These changes have placed new strains on regional transmission systems, warranting new institutions and market mechanisms.[8] One significant event has been the rapid growth in wholesale power transactions. Another concern of the FERC has been the opportunities for transmission owners to give preferential treatment to their own or to their affiliate's power marketing activities.

---

[5] The FERC cites lack of market-based congestion management systems and planning for expansion as impediments to a competitive wholesale electricity market.

[6] The FERC expressed the view that discrimination largely derives from superior access to or control of information on the complexity of system operations by integrated utilities.

[7] These changes include increased reliance on wholesale power markets and the proliferation of retail competition.

[8] The FERC highlighted the "market turmoil" of the summer of 1998 during which price spikes occurred in the Midwest.

The FERC identified two general categories of transmission-related impediments to a competitive wholesale power market. The first category pertains to engineering and economic inefficiencies inbred in the current operation and expansion of the transmission grid. The second relates to actual or perceived undue discrimination by transmission owners. The FERC believes that the current institutional arrangement for wholesale power transactions, which includes functional unbundling (required under Order 888), cannot be relied on to alleviate these impediments along with their adverse consequences for consumers and the performance of the U.S. electric power system.

The FERC devoted several pages in Order 2000 to discussing the drawbacks of stand-alone or separate transmission operations in view of the externalities (e.g., loop flows) and public good characteristics of electric power systems. The theoretical argument for centralization of network operations derives from the presence of these inherent features of electric power networks.[9] Reliance on decentralized markets alone could create technical problems and even havoc on electric power systems by failing to operate the regional grid as an integrated unit.[10]

The FERC discussed the shortcomings of functional unbundling by vertically integrated utilities to prevent undue discrimination. Functional unbundling, which is the offering and pricing of individual services, was

[9] For example, it is generally acknowledged that today's technology precludes markets from carrying out real-time system coordination.

[10] See, for example, the arguments of William Hogan, Paul Joskow, and NERA.

mandated by FERC Orders 888 and 889.[11] Functional unbundling requires costly monitoring and policing by the FERC.[12]

Under functional unbundling, the Commission has found instances where a utility improperly shared information. Even in the presence of codes of conduct, the FERC believes that many if not the majority of violations will never be reported or detected.[13] Overall, the FERC expressed concern about the costly and time-intensive regulatory oversight and administrative burdens that have, up to now, been associated with enforcing codes of conduct. As recognized by the FERC, codes of conduct face the serious problem of a vertically integrated utility having the incentive to violate the rules; in addition, the FERC recognizes the difficulty of regulators to acquiring the necessary information and resources to detect all violations.

The FERC is obviously aware that a vertically-integrated utility would have the incentive and, likely, the ability to exercise its market power in transmission for the purpose of evading regulation and distorting competition in the generation market. In spite of the best of intentions and the implementation of behavioral rules (e.g., codes of conduct) currently in place, monitoring costs incurred by the FERC may be exorbitant. Even then, not all abuses would likely be detected. The FERC acknowledged the continuous problem of how to monitor compliance to prevent anticompetitive or discriminatory behavior. In governing utility conduct through the use of rules, the FERC expressed concern

---

[11] In contrast, corporate unbundling would entail selling off assets to a non-affiliate or establishing a separate affiliate to manage transmission assets.

[12] Other remedies for market power include structural requirements (e.g., structural separation) and price regulation.

[13] FERC Order 889 prescribes codes of conduct and communication protocols for transactions conducted through OASIS.

that the behavioral approach may be expensive to monitor and enforce. Because rules *per se* fail to eliminate the incentive and ability of a utility to engage in anticompetitive abuses, they are almost always vulnerable to evasion.

In sum, the FERC now believes that functional unbundling did not go far enough to facilitate open access. The FERC stated that functional unbundling is "difficult for transmission providers to implement and difficult for the market and the Commission to monitor and police."[14] The source of the problem lies with the fact that functional unbundling neglects to separate operation of the transmission grid and access to it from economic interests in generation. Consequently, undue discrimination can ensue from a regulated transmission monopolist exploiting its market power in transmission to hinder competition in the generation market.

The formation of RTOs would presumably relieve the FERC from having to enforce codes of conduct. This would be the result of the RTO assuming control of the regional transmission network. Presumably, the RTO will greatly constrain the exercise of vertical market power and ensure non-discriminatory open access to the transmission network.

The FERC appears to be see RTOs as the cure (perhaps, a too strong term here) for all the major problems afflicting the wholesale power market. In rationalizing its Final Rule, the FERC identified the major problems confronting the wholesale power market and then proceeded rather extensively in showing why RTOs would eliminate or diminish them. One is left with the obvious question: if the FERC believes RTOs are so highly beneficial, why not make them mandatory? The FERC apparently feels that it does not have the legal

---

[14] FERC Order 2000, 66.

authority to do so; it concludes, instead, that a voluntary approach to RTO formation represents a "measured and appropriate" response to the problems identified.[15]

The FERC places its faith on the voluntary approach along with innovative transmission pricing reforms to elicit "widespread formation of RTOs in a timely manner." The FERC emphasizes in its order that the voluntary approach should in no way be interpreted to mean that it would not exercise its authority under the Federal Power Act to require participation in an RTO where supported by an evidential proceeding.

The FERC argues that RTO formation will highly likely pass a cost-benefit test. Estimated benefits from an Environmental Assessment for the rulemaking range from $2.4 to $5.1 billion per year over the 2000-2015 period.[16] (In comparison, as pointed out by the FERC, the U.S. Department of Energy estimates cost savings from retail access throughout the United States to range from $20 to $32 billion per year.)

Any estimated benefits should be regarded as highly unreliable and, arguably, largely useless for decisionmaking. Nevertheless, from our perspective, it seems that the FERC made a cogent conceptual argument for why RTO cost savings on an annualized basis over time will exceed the costs of RTO formation. From this position, the FERC could logically conclude that a rule encouraging RTO participation is in the public interest. The FERC could have opted for either a mandatory or voluntary approach; it chose the latter, relying heavily on a "carrot" via innovative rates for transmission service to

---

[15] The FERC commented that "We want the industry to focus its efforts on the potential benefits of RTO formation and how best to achieve them, rather than on a non-productive challenge to our legal authority to mandate RTO participation." (Ibid., 116.)

[16] Ibid., 94.

stimulate RTO participation by transmission-owning utilities. Simply, the FERC attempts to make it beneficial for those utilities to join RTOs that have as of yet not done so. As articulated by the FERC, the Final Rule contains "certain favorable ratemaking treatments for those who assume the risks of the transition to a new structure, which should, at a minimum, eliminate any rate disincentives to RTO formation."[17]

4. MINIMUM CHARACTERISTICS AND FUNCTIONS OF AN RTO

In the Final Rule, the FERC requires that to qualify as an RTO a transmission entity should have four minimum characteristics and perform eight minimum functions. These minimum characteristics and functions are designed to ensure that any RTO will be independent and able to provide reliable, non-discriminatory and efficiently priced transmission service that will support competitive regional bulk power markets.

Minimum Characteristics

First, we will discuss the four minimum characteristics for an RTO, which are:

- Independence from market participants
- Appropriate scope and regional configuration
- Possession of operational authority for all transmission facilities under the RTO's control
- Exclusive authority to maintain short-term reliability

[17] Ibid., 116.

Characteristic 1: Independence From Market Participants[18]

The overall purpose of the independence standard is to ensure that an RTO will provide transmission service and operate the grid in a non-discriminatory manner. According to the FERC, the principle of independence is the bedrock upon which an RTO must be built. It applies to all RTOs, whether they are ISOs, transcos, or hybrids of the two. All RTOs must be independent of market participants in both reality and perception. According to the FERC, an RTO will not be successful unless all market participants believe that the RTO will operate the grid and provide transmission service to all grid users on a non-discriminatory basis.

Consequently, the RTO decision-making process must be independent of control by any market participant or class of participants. In order to enforce this required characteristic, the FERC intends to pay considerable attention to governance rules pertaining to both voting shares and voting rules. Because ISOs typically are non-profit corporations, ownership of transmission interests is arguably less likely to affect the independence of the ISO than of a for-profit transco.

Market participants represent those entities whose economics or commercial interests are likely to be affected by an RTO's decisions and actions. Specifically, the FERC defines a market participant as (1) any entity that, either directly or through an affiliate, sells or brokers electric energy, or provides transmission or ancillary services to the RTO, unless the FERC finds that the entity does not have economic or commercial interests that would be

[18] Ibid., 152-237.

significantly affected by the RTO's actions or decisions; and (2) any other entity the FERC finds that has economic or commercial interests that would be significantly affected by the RTO's actions or decisions. The FERC views RTO transmission owners as market participants because one or more transmission owners could influence the RTO's decision to the detriment of other market participants. Similarly, ancillary service providers are considered market participants since the RTO will be the supplier of last resort for ancillary services. The FERC also hopes to prohibit, on a case-by-case basis, circumstances where buyers of electric energy that own a for-profit RTO could manipulate its access and curtailment decisions.

The RTO, its employees and any non-stakeholder directors must not have any financial interests in market participants. Further, all RTOs must propose an objective monitoring plan to assess whether the RTO's involvement as operators of bilateral and spot markets in ancillary services, as well as buyers and resellers in these markets, favors its own economic interests over those of its customers or members.

The FERC recognizes that the voluntary creation of RTOs requires current owners of transmission assets to be willing to transfer operational control of those assets to RTOs or to divest their interests in their entirety. The FERC does not prohibit market participants from having passive ownership in RTOs; however, the FERC will review passive ownership proposals on a case-by-case basis. To gain FERC approval, passive owners must relinquish control over operational, investment, and other decisions to ensure that the RTO will treat all users of the grid on an equal basis in all matters; the RTO will be obligated to undertake, and propose processes for, an independent compliance audit to ensure the objectivity of its decision-making process from the passive owners; and the FERC will take appropriate action if it finds evidence of abuse.

In addition, the FERC will not ignore market participants' active ownership of voting interest in the RTO. It would be a clean solution to allow no active ownership of RTOs from the outset, greatly reducing the need to monitor the market. Many current transmission owners would be less likely, however, to voluntarily relinquish ownership or control of their transmission facilities. The FERC has therefore concluded that, for a transitional period, any market participant may own up to a five percent active ownership interest in an RTO. Within five years of RTO approval, however, active ownership by market participants must end unless the RTO seeks and the FERC approves an extension.

The FERC also has "benchmarked" the active ownership by classes of market participants at 15 percent to assure that each RTO has a decision-making process that is independent of control of any market participant or class of participants. To determine whether the 15 percent benchmark is exceeded, the FERC will review RTO proposals. The FERC does not establish or define or categorize classes of market participants in the Final Rule. Instead, the FERC will allow each RTO to propose classes that it believes are relevant to its region. FERC does warn, however, that it will be inclined to define classes of participants broadly to avoid bypassing the 15 percent class cap through narrowly defined classes. In addition, the FERC will require independent compliance auditing to ensure that market participants, with either active or passive ownership interests, will not use those interests, to put other non-owner market participants at a competitive disadvantage.

The FERC makes no specific, detailed requirements as to RTO governance other than the general requirement that the decision-making process should be independent of any market participant or class of participants. Where there is a governing board with classes of market

participants, however, no one class should be allowed to veto a decision reached by the rest of the board, and no two classes should be able to force through a decision opposed by the rest of the board. Where a non-stakeholder board exists, there must be both formal and informal mechanisms to ensure that stakeholders can advise the board and that any stakeholder committee be balanced so that no one class dominates its recommendations or decisions.

Finally, to ensure their independence from market participants, RTOs must have the independent and exclusive right to make FPA section 205 filings that apply to the rates, terms, and conditions of transmission services over the facilities operated by the RTO. A transmission owner has independent authority to set the level of its portion of the revenue requirement to be collected by the RTO, unless it voluntarily relinquishes this right during the RTO negotiation process or subsequently. Thus, although transmission owners may have on file a tariff that assures their recovery of transmission revenues from the RTO, which in turn may affect the RTO's revenue requirement, only the RTO may file changes to the open access tariff.[19]

Characteristic 2: Appropriate Scope and Regional Configuration[20]

The second minimum characteristic of an RTO is that the RTO must serve an appropriate region of sufficient scope and configuration to permit the RTO to effectively perform its required functions and to support efficient and non-discriminatory power markets. All RTO proposals filed must identify a region of

[19] Because the RTO would be responsible for rate design, the transmission owner loses control over the revenues required to cover its future costs.

[20] FERC Order 2000, 238-267. See this report's section "Scope and Configuration of an RTO" for further discussion of this topic.

appropriate scope and configuration. The FERC contends that FPA section 202(a) gives it the authority, after consultation with state commissions, to fix and modify boundaries for regional districts for the voluntary interconnection and coordination of facilities; at this time, however, the FERC will not prescribe initial boundaries for RTOs. Instead, the FERC will rely on the transmission owners, market participants, and regulators in a particular region to, at least in the first instance, propose the appropriate scope and regional configuration of an RTO. The FERC reasons that these entities have a better understanding of the dynamics of the transmission system in that region. The FERC will review the proposed regional transmission entity for its scope and regional configuration and, if the scope is inappropriate, the transmission entity will not be deemed an RTO. The FERC will not approve RTOs that are too limited to satisfy several of the necessary minimum functions. Overall, the FERC hopes to avoid transmission owners gaining a strategic advantage from RTO formation.

Indeed, FERC recognizes that the industry will continue to evolve, and the appropriate regional configuration will likely change over time with technology and market developments. As such, the FERC provides guidance in the Final Rule by identifying factors that affect appropriate regional configuration, without actually prescribing boundaries. Below are several regional configuration factors identified by the FERC that would tend to favor large RTOs:

- An RTO of sufficient regional scope can make more accurate determinations of available transmission capacity across a larger portion of the grid;
- An RTO of sufficient regional scope would internalize loop flow and address loop flow problems over a larger region;
- A single transmission operator over a large area can more effectively prevent and manage transmission congestion;

- Competitive benefits result from eliminating pancaked transmission rates within the broadest possible energy trading area;

- A single OASIS operator over an area of sufficient regional scope will better allocate scarcity as regional demand is assessed, with greater simplicity (one-stop shopping) and at lower costs; and

- Necessary transmission expansion would be more efficient if planned and coordinated over a larger region.

Notwithstanding these factors, the FERC recognizes that there may be offsetting limitations that militate against RTOs being too large, including limitations on how many facilities or transactions can be overseen reliably by a single operator, imposed either by hardware design or costs, or imposed by human limitations; the difficulties and costs of transferring operation control to one RTO; and the difficulties of reaching consensus on appropriate transmission rate design for a larger number of transmission owners. While the FERC recognizes that a large scope is important for an RTO to effectively perform its required functions and to support efficient and non-discriminatory power markets, adequate scope is not necessarily determined by geographic distance alone. Other factors that may indicate adequate scope include the number of buyers and sellers covered by the RTO, the amount of the load served, and the number of transmission miles under the RTO's operational control. In all cases, the scope must be large enough to achieve the regulatory, reliability, operational, and competitive objectives of the Final Rule. When a proposed regional transmission entity is of sufficient scope for some RTO purposes, but not others, the FERC is open to flexible and innovative ways for an RTO to achieve sufficient scope. For example, an RTO may achieve sufficient "effective scope" by coordination and agreements with neighboring

entities, or by participation in a group of RTOs with either hierarchical control or a system of very close coordination to create a seamless trading area. The FERC hopes that existing impediments to trade, reliability, and operational efficiency be eliminated to the greatest extent possible. For a "smaller" RTO to demonstrate "effective scope," it must demonstrate that its arrangements eliminate the effects of "trading seams" so that it is the practical equivalent of seamless trading achieved by forming a larger RTO.

In addition to factors affecting the size of a region, other factors may affect the delineation of regional RTO boundaries. RTO boundaries are to be drawn so as to facilitate and optimize the "competitive, reliability, efficiency," and other benefits that RTOs are intended to achieve. Several factors must be balanced to assess the appropriateness of an RTO's boundary configuration. First, the region should be configured so that an operating RTO can ensure non-discrimination and enhance efficiency in the provision of transmission and ancillary services, maintain and enhance reliability, encourage competitive energy markets, promote overall operating efficiency, and facilitate efficient expansion of the transmission grid. To the extent possible, RTO boundaries should encompass areas for which real-time communication is critical and unified operation is preferred.

Second, the RTO can best achieve its benefits if there is only one transmission operator in a region. The operator should have control over all transmission facilities within a large geographic area, including those of non-public utility entities. The region should not be non-contiguous and should not have ("Swiss cheese") holes. Third, the RTO boundaries should encompass a highly interconnected portion of the grid. Portions of the grid that are highly integrated and interdependent should not be divided into separate RTOs. The FERC will consider on a case-by-case basis whether a weak interconnection

exists on a regional boundary or whether it acts as a barrier of trade and should, therefore, be placed within an RTO region.

Fourth, the RTO region should be configured to deter the exercise of market power. It is important for an RTO region to not be dominated by a few buyers or sellers of energy. An RTO configuration also should not allow an owner of a critical transmission corridor to exercise transmission market power by collecting congestion fees. Fifth, RTO boundaries should be configured to recognize trading patterns and be capable of supporting trade over a large area, and not perpetuate unnecessary boundaries or uneconomical barriers between energy buyers and sellers.

Sixth, an RTO's boundaries should take into account existing regional boundaries of useful institutions, such as NERC regions, in order not to disrupt them, although in evolving markets, efficiencies may call for new configurations. Seventh, RTO boundaries should encompass existing regional transmission entities, such as FERC-approved ISOs, although in some instances an appropriate region may well be larger. Eighth, boundaries should encompass existing control areas, although they might be grouped. Finally, the RTO boundary should take into account international boundaries, recognizing that natural transmission boundaries do not necessarily coincide with international boundaries, but that FERC's jurisdiction does end there.

In sum, to satisfy the scope and configuration requirements of the Final Rule, any RTO proposal should intend to operate all or most of the transmission facilities within the region. For an RTO to move forward, all or nearly all of the transmission owners representing a large majority of the transmission facilities should be on board. If the RTO does not have all the transmission facilities under its control, it should identify the reasons for this, as well as its continuing efforts to include all facilities and any interim arrangements to coordinate with non-participants.

Characteristic 3: Possession of Operational Authority for All Transmission Facilities Under RTO Control[21]

The RTO must have operational authority for all transmission facilities under its control and must be the security coordinator for its region. Operational authority here refers to the authority to control transmission facilities. It includes, but is not limited to, switching transmission elements (for example, transmission lines and transformers) into and out of operation in the transmission system, monitoring and controlling real and reactive power flows, monitoring and controlling voltage levels, and scheduling and operating reactive resources.

The RTO is also required to be the security coordinator for its region. The role of a security coordinator is to ensure reliability in real-time operations of the power system. The functions of the security coordinator are enhanced when they are performed over large regions. As security coordinator, the RTO is responsible for (1) performing load-flow and stability studies to anticipate, identify, and address security problems; (2) exchanging security information with local and regional entities; (3) monitoring real-time operating characteristics such as the availability of reserves, actual power flows, interchange schedules, system frequency and generation adequacy; and (4) directing actions to maintain reliability, including firm load shedding. The independence of the security coordinator is essential for ensuring non-discriminatory transmission service: in the course of performing its reliability functions, the security coordinator would receive much information that is commercially sensitive. It is

[21] Ibid., 267-282.

therefore important that the security coordinator in a region be independent of the market participants–the FERC believes that the RTO will have the necessary independence.

The FERC will allow an RTO to contract out its security coordinator functions to an independent security coordinator. The FERC will also allow more than one RTO to share a single security coordinator. It is required, however, that all transmission control and security coordinator functions be performed in a non-discriminatory manner for all market participants. While the FERC does not require the RTO to consolidate multiple existing control areas into a single control area, the FERC will allow a region to transition itself to a hierarchical control structure; namely, power system control relying on a master satellite control structure that establishes a single, consolidated control room with existing control centers acting as satellite control centers reporting to the RTO master control. RTOs are also free to adopt a different control structure that best meets the region's needs. Whatever control method is chosen, the RTO must have clear authority to direct all actions that affect the facilities under its control, including satellite control centers; and the system of operation control chosen must ensure reliable operation of the grid and non-discriminatory access to the grid by all market participants.

Characteristic 4: Exclusive Authority to Maintain Short-Term Reliability[22]

The RTO must have exclusive authority for maintaining the short-term reliability of the grid. Short-term reliability is meant here to cover all aspects of transmission reliability responsibilities short of grid capacity enhancement. It

[22] Ibid., 282-323.

includes all time periods from "real time" up to the planning horizon. There is no time gap between what is included within short-term reliability and the RTO's planning responsibilities. The FERC identifies four basic short-term reliability responsibilities: (1) the RTO must have exclusive authority for receiving, confirming, and implementing all interchange schedules, (2) the RTO must have the right to order redispatch of any generator connected to transmission facilities it operates if necessary for the reliable operation of these facilities, (3) when the RTO operates transmission facilities owned by other entities, the RTO must have authority to approve and disapprove all requests for scheduled outages of transmission facilities to ensure that the outages can be accommodated within established reliability standards, and (4) the RTO must perform its functions consistent with established NERC (or its successor) reliability standards, and the RTO must notify the FERC immediately if implementation of these or any other externally established reliability standards will prevent it from meeting its obligation to provide reliable, non-discriminatory transmission service.

The FERC requires that the RTO must have exclusive authority for receiving, confirming and implementing all interchange schedules, which are often coincident with schedules for unbundled transmission service. RTOs that operate a single control area will automatically assume this function. If the RTO structure includes control area operators that are market participants or their affiliates, the RTO will have the authority to direct the implementation of all interchange schedules. To address concerns about protecting commercially sensitive information, the FERC requires the RTO or entities who operate control areas within the RTO region to sign agreements that separate reliability personnel and the relevant information they receive from their wholesale merchant personnel. In the event that the RTO structure includes non-RTO

control operators that receive commercially sensitive information, the RTO will monitor for any unfair competitive advantage that these operators might derive and report to the FERC if problems are detected.

In order to maintain the reliability of the transmission system, the entity that controls transmission must also have control over some generation. The FERC requires the RTO to have the right to order the redispatch of any generator connected to the transmission facilities it operates, when found necessary for the reliable operation of the transmission system. The RTO's authority to order generator redispatch is to be used by the RTO to prevent or to manage emergency situations; one such situation is abnormal system conditions that require automatic or immediate manual action to prevent or limit equipment damage or the loss of facilities or supply that could adversely affect the reliability of the electric system, or to restore the system to a normal operating state. (Redispatch for congestion management is addressed in the section on congestion management.) Each RTO is required to develop procedures for generators to offer their services and to compensate generators that are redispatched for reliability. Ideally, this control should be exercised through a market where the generators offer their services and the RTO chooses the least cost options. For reliability purposes, however, the RTO must have full authority to order the redispatch of any generator, subject to existing environmental and operating restrictions that may limit the generator's ability to change its dispatch.

The FERC reasons that RTOs need to have control over transmission maintenance because outages of transmission facilities affect the overall transfer capability of the grid. If a facility is removed from service for any reason, the power flows on all regional facilities are affected and these shifting power flows may cause other facilities to become overloaded, adversely affecting system reliability. Therefore, when the RTO operates transmission

facilities owned by other entities, the RTO must have the authority to approve and disapprove all requests for scheduled outages of transmission facilities to ensure that the outages can be accommodated within established reliability standards. (When the RTO is a transco it will make the necessary assessments as an internal company matter because it is also the transmission owner.)

Where an RTO region contains several transmission owners, the RTO will receive requests for authorization of preferred maintenance schedules; it will use its regional perspective to coordinate the individual maintenance schedules with one another as well as with expected seasonal system demand variations; it will review and test the schedules against state, regional, and national reliability standards; and it will approve specific requests for scheduled outages or require changes to maintenance schedules when they fail to meet reliability standards. The RTO will update and publish maintenance schedules as needed.

Minimum Functions

The RTO must perform eight minimum functions. They are:

- Administer its own tariff and employ a transmission pricing system that will promote efficient use and expansion of transmission and generation facilities
- Create market mechanisms to manage transmission congestion
- Develop and implement procedures to address parallel path flow issues
- Serve as a supplier of last resort for all ancillary services required in Order 888 and subsequent orders

- Operate a single OASIS site for all transmission facilities under its control with responsibility for independently calculating total transmission capacity and average transmission capacity

- Monitor markets to identify design flaws and market power
- Plan and coordinate necessary transmission additions and upgrades

- Coordinate interregional activities

Function 1: Sole Administrator of Its Own Transmission Tariff[23]

To ensure non-discriminatory transmission service, the FERC requires the RTO to be the sole administrator of its own transmission tariff. This makes the RTO the sole authority making decisions on the provision of transmission service including decisions relating to new interconnections whether over existing facilities or new facilities. The RTO must be the sole provider of transmission service; it must also administer its own tariff and not the tariffs of other entities. According to the FERC, only by having the RTO as the sole transmission provider can transmission customers be assured that they have a non-discriminatory and uniform access to regional transmission facilities. The RTO must administer its own tariff and have the independent authority to file tariff changes. Further, the RTO's tariff must not result in transmission customers paying multiple access charges. (Further discussion on rate design is contained in the section on transmission pricing reforms.)

[23] Ibid., 324-332.

Function 2: Create Market Mechanisms to Manage Transmission Congestion[24]

The RTO must ensure the development and operation of market mechanisms to manage transmission congestion. The responsibility for operating these market mechanisms must reside either with the RTO itself or with another entity that is not affiliated with any market participant. The reason given by the FERC is that the use of such mechanisms must necessarily be closely coordinated with the operational activities that the RTO performs day-to-day or in real time. The RTO is required to implement a market mechanism that provides all transmission customers with efficient price signals conveying the consequences of their transmission use decisions. The congestion pricing proposal should seek to ensure that (1) the generators that are dispatched during periods of transmission constraints are those that can serve system loads at least cost, and (2) limited transmission capacity is used by market participants valuing that use most highly. Price signals can also be used to assist in determining the efficient size and location of new generation and grid expansions; however, price signals alone cannot be relied upon to identify all needed enhancements. The RTO or other independent entity can operate the market for congestion management on either a centralized or decentralized basis.

The FERC does not prescribe a specific congestion pricing mechanism. The FERC does, however, take note that markets that are based on locational marginal pricing (LMP) and financial rights for firm transmission service appear to provide a sound framework for efficient congestion management. LMP

[24] Ibid., 332-386.

assesses congestion charges directly to transmission customers in a manner consistent with each customer's actual use of the system and the actual dispatch of its transactions. LMP can lead to the creation of financial transmission rights, which allow customers to pay known transmission rates and to hedge against transmission congestion charges. The FERC notes, however, that LMP can be costly and difficult to implement, particularly by entities that have not previously operated as tight power pools. The FERC, therefore, will allow RTOs flexibility to propose congestion pricing methods that are best suited to each RTO's individual circumstances.

For transmission congestion management, RTOs are required to rely on market mechanisms to the maximum extent practicable. However, there may be times when even well-functioning markets fail to alleviate a specific instance of congestion. In those cases, the RTO must have the authority to curtail one or more transmission service transactions that are contributing to the congestion, even if the curtailing of a transaction may sometimes require redispatch of generation.

Function 3: Develop and Implement Procedures to Address Parallel Path Flow[25]

RTOs are required to develop and implement procedures to address parallel path flow issues within its own region and with other regions. RTO formation, with widened geographic scope of transmission scheduling and expanded coverage of uniform transmission pricing structures, should provide an opportunity for the RTO to internalize most, if not all, of the parallel path flow effects within its own region in its scheduling and pricing procedures. The RTO

[25] Ibid., 386-393.

should have measures in place on the date of its initial operation to address parallel path flow issues within its own region. These measures, combined with the requirement that the RTO be the sole provider of transmission services over facilities it owns or controls, will eliminate or diminish the ability of transmission users to use different contract path suppliers within an RTO. However, there is an overall pro-competitive effect of transmission users having an increased ability to move power anywhere within the RTO at a single rate. The FERC will allow an RTO up to three years to have measures in place to address parallel path flow problems between regions.

Function 4: Serve as a Provider of Last Resort for All Ancillary Services[26]

An RTO must serve as the provider of last resort of all ancillary services as required by FERC Order 888 and subsequent orders. The term "provider" of last resort is used rather than "supplier" to clarify that the RTO is obligated to have adequate arrangements in place for the provision of ancillary services. This obligation is necessary because: (1) the RTO is the only grid operator capable of providing certain ancillary services that not all transmission customers are capable of self-supplying, and (2) it may be more efficient for the RTO to provide some ancillary services for all transmission users on an aggregated basis. The RTO could fulfill its ancillary services obligations through contractual mechanisms, through either indirect or direct control of specified generation facilities, or through market mechanisms. But regardless of the method used to provide the services, ancillary services must be included in the

[26] Ibid., 393-426.

RTO administered tariff so that transmission customers will have access to one-stop shopping for transmission service.

All market participants will continue to have the option of self-supplying or acquiring ancillary services from third parties. In such instances, the RTO must determine whether the transmission customer has adequately obtained these services. Allowing self-supply provides a competitive check on the RTO by providing the RTO with an incentive to provide the services at the lowest costs. In all cases, the RTO must have the authority to decide the minimum required amounts of each ancillary service and, if necessary, the locations at which these services must be provided. All generators or facilities that provide ancillary services must be subject to the direct or indirect operational control of the RTO. To ensure the reliable operation of the system, the RTO must have authority to determine quantities and locations for ancillary services.

The RTO is required to promote the development of competitive markets for ancillary services whenever feasible. Indeed, some generation-based ancillary services could be acquired in short-term markets. The RTO will have much flexibility in determining detailed market design issues. RTOs are specifically required to develop a real-time balancing market that is developed and operated by either the RTO itself or another entity that is not affiliated with any market participant.

In determining cost responsibility for imbalances, the FERC ruled that no distinction needs to be made between changes in load and changes in generation. Because of differences between load and generation in the time needed to respond to an operator's instructions, however, for the purpose of discouraging inaccurate schedules a penalty mechanism that treats loads and generators differently may be appropriate.

Function 5: Operate a Single OASIS and Independently Calculate TTC and ATC[27]

An RTO must be the single OASIS site administrator for all transmission facilities under its control. However, this does not necessarily mean that each RTO must itself operate the OASIS site for its region. The FERC requires that there be no more than one OASIS site for the facilities under the RTO's control so that transactions can be carried out more efficiently, at a lower transaction cost. The RTO must also assure that the OASIS site operator, if not itself, has the same attributes of independence required for an RTO. Further, the FERC will not prevent an RTO from participating jointly with other RTOs in a "super-OASIS" multi-regional site.

An RTO should independently calculate Total Transmission Capacity (TTC) and Available Transmission Capacity (ATC) to assure that ATC values are based on accurate information and consistent assumptions.[28] When data are supplied to the RTO by others, the RTO must create a system of test and checks that ensure transmission customers of coordinated and unbiased data. In addition, RTOs should coordinate ATC values with adjacent regions. An RTO OASIS site, including ATC calculations, must be fully operational upon commencement of the RTO.

---

[27] Ibid., 426-435.

[28] Comments to the FERC NOPR indicated widespread dissatisfaction with the reliability of posted ATC numbers by transmission owners.

Function 6: Monitor Market to Identify Design Flaws and Market Power[29]

In view of the different forms of RTOs that could be developed by market participants and the varying types of markets that each RTO may be operating within its own region, different market monitoring plans are likely to be appropriate for different RTOs. Consequently, the FERC will require RTO proposals to contain a market monitoring plan that identifies what the RTO participants believe are the appropriate monitoring activities the RTO or an independent monitor should perform. The monitoring plan must contain certain standards. The plan must be designed to ensure the availability of (1) objective information about the markets that the RTO operates or administers, and (2) a vehicle to propose appropriate action regarding any opportunities for efficiency improvement, market design flaws, or market power identified by that information. The monitoring plan must also evaluate the behavior of market participants, including transmission owners, in the region to determine whether their behavior hampers the ability of the RTO to provide reliable, efficient, and non-discriminatory transmission service.

Because not all market operations in a region may be operated or administered by the RTO (for example, some markets may be operated by unaffiliated power exchanges), the monitoring plan must periodically assess whether behavior in other markets in the RTO's region affect RTO operations and, conversely, how RTO operations affect the efficiency of markets operated by others. Market monitoring reports on opportunities for efficiency improvement, market design flaws, and market power abuses in the markets

[29] FERC Order 2000, 435-466.

the RTO operates and administers must be filed with the FERC and other affected regulatory authorities.

The market monitoring plan will identify the markets that will be monitored, that is transmission and ancillary services, as well as other pertinent markets, for example congestion management markets. The monitoring plan should examine the structure of each market, compliance with market rules, the behavior of individual market participants, and the market as a whole. The market monitoring plan should identify any proposed sanctions or penalties and the specific conduct to which they would be applied.

An appropriate market monitoring plan, according to the FERC, must provide an objective basis to observe markets and to provide market analyses. It will also be a useful tool to provide information for assessing market performance. The FERC has the primary and ultimate responsibility to ensure that regional wholesale markets served by RTOs operate without market power; the market monitoring report should, however, be useful to state commissions when overseeing the development of competitive electric retail markets.

Function 7: Plan and Coordinate Necessary Transmission Additions and Upgrades[30]

According to the FERC, the RTO must have the ultimate responsibility for transmission planning and expansion within its region in order to provide efficient, reliable and non-discriminatory service and to coordinate such efforts with the appropriate state authorities. A single entity must coordinate transmission planning and expansion to ensure a least cost outcome that maintains or improves existing reliability levels. The RTO planning and

[30] Ibid., 466-492.

expansion must satisfy three requirements or, alternatively, demonstrate an alternative proposal that is consistent with or superior to these three requirements. The three requirements the RTO must satisfy are the following: (1) its planning and expansion must encourage market-driven operating and investment actions for preventing and relieving congestion; (2) its planning and expansion must accommodate efforts by state regulatory commissions to create multi-state agreements to review and approve new transmission facilities, coordinated with programs of existing Regional Transmission Groups where necessary; and (3) the RTO must file a plan with the FERC with specified milestones that will ensure meeting the overall planning and expansion requirement not later than three years after initial operation, in the event the RTO is unable to satisfy this requirement when it commences operation.

The RTO's implementation of its transmission planning and expansion function within the region requires the addressing of many specific design questions; these include who decides which projects should be built and how the costs and benefits of the project should be allocated. The FERC expects that the specific features of the process should take account of and accommodate existing institutions and the physical characteristics of the region.

Planning new generation or new transmission requires a coordinated approach to ensure reliability and efficient congestion management. Where feasible, according to the FERC, an RTO should encourage market approaches to relieve congestion. A market approach will require providing all transmission customers with access to well-defined transmission rights and efficient price signals that take into account the consequences of their transmission-usage decision. If successful, the decision of where, when and how to relieve congestion will be driven by economic considerations. The FERC believes that the pricing mechanism for transmission planning and expansion should be

compatible with the pricing signals for shorter-term transmission constraints (congestion management) so that market participants can choose the least-cost option.

Any successful market-driven approach must include accurate price signals that reflect the costs of congestion and expansion costs, linking current usage and future expansion. Therefore, every RTO must establish a system of congestion management that establishes clear rights to transmission facilities and provides market participants with price signals that reflect congestion and expansion costs.

RTOs must accommodate efforts by state regulatory commissions to create multi-state agreements to review and approve new transmission facilities. These agreements can expedite transmission construction and eliminate duplicative and possibly conflicting reviews by multiple states. The RTO planning and coordination system must be able to accommodate the possible emergence of new regional regulatory systems.

Function 8: Interregional Coordination[31]

According to the FERC, coordination of activities among regions is significant in maintaining a reliable bulk transmission system and for the development of competitive markets. An RTO must develop mechanisms to coordinate its activities with other regions whether or not an RTO exists in these other regions. Specifically, an RTO must ensure the integration of reliability practices within an interconnection and market interface practices among regions. Thus, an RTO is expected to work closely with other regions to

[31] Ibid., 492-497.

address interregional problems in addition to problems at the market interface seams between RTOs.

The integration of reliability practices involves procedures for coordination of reliability practices and sharing of reliability data among regions in an interconnection; they include procedures that address parallel path flows, ancillary service standards, transmission loading relief procedures, among other reliability coordination requirements.

The integration of market interface practices involves developing some level of uniformity of inter-regional market standards and practices; they include the coordination and sharing of data necessary for calculation of TTC and ATC, transmission reservation practices, scheduling practices, and congestion management procedures.[32]

5. ADDITIONAL DISCUSSION OF SPECIFIC PROVISIONS

Flexibility of Organizational Structure

The Final Rule contains the tenet that parties should have flexibility in forming an RTO's organization so long as the RTO satisfies the minimum characteristics and functions discussed above. The FERC's position is that participants should have the discretion to develop mutually acceptable regional arrangements with respect to RTO formation and coordination.

[32] The three eastern ISOs currently have a Memorandum of Understanding (MOU) to study increasing tie capacity and to facilitate the operation of broader competitive markets.

As a comment, during the last several years market participants and analysts have engaged in a spirited debate over the organizational structure of regional transmission entities. Some parties favor ISOs, while others favor transcos, pairing an ISO with a gridco, or other organizational structures. The Final Rule leaves it up to the regional players to decide what RTO organizational structure they want to adopt "as long as the RTO meets our [FERC's] minimum characteristics and functions and other requirements."[33] The FERC adds that "[i]t is not our intention to favor or disfavor transcos, ISOs, or other organization forms. . .we do not believe that the requirements for forming an RTO in this Final Rule favor any RTO structure."[34]

The FERC's rationale for flexibility of organizational structure derives from "differing conditions facing various regions." Simply, the benefits of a particular organizational structure depend on the features of a regional transmission system. For example, as articulated by some analysts, the potential benefits of an ISO are diminished to the extent transmission ownership in a region has amalgamated sufficiently to internalize loop flow and other network externalities. As a counter example, a transco becomes less attractive in a region where conflicts of interest in system operation are potentially more pronounced.

The FERC's unwillingness to favor one organizational structure over others seems reasonable in view of what it characterizes as "our evolving experience with the workability of certain RTO models;" [consequently,] "it would

---

[33] FERC Order 2000, 124.

[34] Ibid., 125. A recent article, however, argues "Don't be misled. The FERC claims to be agnostic, but it still has a vision. And the vision leads inexorably to one conclusion. The preferred form for an RTO is the independent system operator, or ISO." (Jeremiah D. Lambert, "Order 2000: A Subtle but Clear Preference for ISOs," *Public Utilities Fortnightly* [March 1, 2000]), 36.

be inappropriate for us [FERC] to mandate a single RTO model of ownership and operation."[35]

The Final Rule supports the concept "open architecture," which the FERC defines as a general approach permitting regional transmission organizations to evolve over time to quite different structures.[36] Features of an RTO, such as geographic scope and operations to meet market needs, may change over time in view of new technology and market conditions. The Final Rule limits changes to those that would continue to satisfy an RTO's minimum characteristics and functions that were previously discussed in this report. The FERC will review changes to an approved RTO on a case-by-case basis.[37]

The Collaborative Process

One key element of the Final Rule is FERC's commitment to a collaborative process to assist in the voluntary formation of RTOs. Collaboration as applied here means a consensus-building process whereby transmission owners, market participants, interest groups and governmental officials attempt to reach mutual agreement on how best to establish RTOs in their respective regions. The FERC encourages all state commissions, public utilities, public power and cooperative utilities, power markets and brokers, and

[35] FERC Order 2000., 204.

[36] One commenter argued that an RTO must have discretion to change its structure, even if opposed by members.

[37] One problem not addressed by the FERC is the non-adaptability of an RTO to changed technological or economic conditions because of inertia or self-interest. An ISO, for example, may find it contrary to its self-interest to change its structure even when warranted by new conditions.

consumer and environmental groups to support a collaborative process for voluntary RTO formation and Final Rule compliance. Because electricity grids in North America flow across international boundaries, the FERC also welcomes participation in the RTO collaborative process by Canada and Mexico. Because the collaborative process must accommodate the different stages of RTO formation across the different regions of the country, the FERC will initiate five two-day collaborative workshops in March and April of 2000 in the following five cities: Philadelphia, Pennsylvania; Cincinnati, Ohio; Atlanta, Georgia; Kansas City, Missouri; and Las Vegas, Nevada. (The FERC emphasizes that the selection of locations for the initial workshops does not indicate a preference for specific RTO boundaries; but instead, these cities were selected because of their convenient locations.) The FERC staff will convene these initial workshops and provide policy and technical guidance consistent with Order 2000. All transmission owners are expected to attend at least one workshop, with parties allowed to attend more than one.

The primary objective of each workshop is to develop a consensus agreement by the regional participants establishing a strategic process and a schedule for further collaboration. Indeed, the FERC expects other meetings will be convened following the workshops by parties in each region to bring the parties together to form an RTO. (Regional participants are expected to bear the costs of collaborative meetings after the initial workshops.) The particular collaboration process will depend on whether the region is considering formation of an ISO, a transco, or other form of RTO. In particular, the regional workshops will help determine what, if any, impediments exist to the formation of one or more RTOs in a particular region and how the FERC staff could assist in overcoming those impediments. Because different regions are at different stages in RTO formation, agendas and procedural rules of the regional

workshops may vary from workshop to workshop. FERC staff will include both technical staff and dispute resolution staff. At the request of parties, the FERC staff may play a role in the formation of RTOs. A group might alternatively request that independent, private-professional-facilitation services be arranged by the FERC.

Scope and Configuration of an RTO

As stated earlier, the Final Rule provides the obscure guiding principle that an RTO region needs to be of sufficient "scope and configuration" to perform its function efficiently.[38] The FERC attempts to clarify the word "sufficient" by adding that a larger RTO may be superior in dealing with available transmission capacity calculations, loop flow, congestion management, pancaked rates, and OASIS operations and transmission planning. One of the Rule's underlying principles is that RTOs should be large enough to improve reliability and create more efficient, robust power markets.[39] This means that an RTO's scope should be able to remove impediments to trade, reliability, and operational efficiency to the extent practicable (see Table 2).[40] Overall, the "scope" standard in the Final Rule gives wide discretion to transmission owners, market participants and regulators, presumably reflecting a lack of consensus within the FERC on a specific mandate with regard to geographic scope or configuration. The FERC

[38] FERC Order 2000, 238.

[39] It is uncertain whether existing single-state ISOs will satisfy the "geographic scope" standard.

[40] See earlier discussion in "Characteristic 2: Appropriate Scope and Regional Configuration."

reasoned that regional entities have the best understanding of the dynamics of the transmission system in their locale.

The FERC recognizes that special factors affect the appropriate size and configuration of an RTO; some of these are specific to a region and include market, operational and technological conditions. For example, the geographic scope of an RTO may be justifiably smaller when it coordinates and makes agreements with neighboring RTOs or participates in a group of RTOs with either hierarchical control or a system of tight coordination. By cooperating with adjacent RTOs and, consequently, creating a seamless trading area, an RTO is able to satisfy some of the minimum characteristics and functions.

TABLE 2

FERC'S CRITERIA FOR RTO BOUNDARIES

- Allows for RTO to perform essential functions and to achieve its goals
- Encompasses one contiguous geographic area
- Encompasses a highly interconnected portion of the grid
- Deters exercise of market power
- Recognizes trading patterns
- Considers existing regional boundaries
- Encompasses existing regional transmission entities
- Encompasses the existing control area
- Considers international boundaries

Source: FERC Order 2000.

Guidance on Transmission Pricing Reforms

The Final Rule provides guidance on a number of ratemaking issues. For example, it lists several objectives of ratemaking practices; they include: (1) eliminating regional rate pancaking,[41] (2) managing congestion, (3) internalizing loop flows, and (4) providing incentives for transmission owning utilities to efficiently operate and invest in their systems. Overall, the FERC laid out rather specific guidelines on appropriate transmission-pricing reforms by RTOs.

The FERC reasons that transmission pricing reform is inevitable in an environment where an RTO will be searching for ways to support regional congestion management and regional transmission capacity expansion.[42] Under prevailing ratemaking practices, transmission owners may have disincentives to efficiently operate and expand their systems.

The FERC encourages RTOs to implement "license plate" rates during the transitional period of five to ten years. Such rates would help to recover sunk costs by setting different access charges for different areas across the region.[43] The FERC expects "license plate" rates to mitigate cost shifting among various

---

[41] The FERC defines rate pancaking as the situation where a transmission customer pays separate access charges for each utility service area that the customer's contract path crosses.

[42] The FERC justified pricing reform as "a result of the rapid restructuring of the industry that is underway, particularly with respect to changes in the ownership and control of transmission assets, and changes in the transmission services being provided in competitive generating markets." (FERC Order 2000, 562).

[43] Presumably, the different license plate areas will reflect the sunk costs of each transmisison-owning utility.

individual transmission owners, in the process removing what it sees as a serious impediment to RTO formation. By eliminating rate pancaking, "license plate" pricing would prevent drastic changes in transmission rates from the formation of an RTO.

Regarding congestion management, the FERC requires RTOs to establish rights to transmission facilities and to provide market participants with price signals that reflect congestion and expansion costs. As stated earlier, the FERC supports the basic principle that congestion pricing should "ensure that the generators that are dispatched in the presence of transmission constraints must be those that can serve system loads at least cost, and limited transmission capacity should be used by market participants that value that use most highly."[44]

The FERC has an apparent preference for one pricing method for congestion management, namely, locational marginal pricing (LMP), by commenting that this pricing approach will "simulate efficient use of the transmission system, and facilitate the development of competitive electricity markets." The FERC adds that efficient congestion management seems to be consistent with markets incorporating LMP coupled with financial rights for firm transmission service.[45] An alternative to LMP, as endorsed by some commenters, would manage congestion by physical transmission rights that are tradable in a secondary market.

In sum, the FERC seems to view LMP as an acceptable pricing method for managing congestion. But it acknowledges that "we [FERC] have not yet

---

[44] FERC Order 2000, 525-26.

[45] These rights are economically similar to a tradable contract for physical transmission rights but they do not require trading to achieve least-cost dispatch.

identified one approach [for congestion pricing] as being clearly superior to all others."[46] Consequently, RTOs will have discretion to propose an approach that is tailored to each RTO's individual circumstances.[47]

The FERC is encouraging other innovative pricing approaches such as performance-based regulation (PBR), returns on equity of non-traditional methods of depreciation schedules for new transmission investments, and incremental pricing for new transmission investments. The FERC hopes that utilities will find RTO participation along with the benefits of innovative pricing "to be a dynamic business opportunity."

Some of these innovative pricing approaches will be available only to January 1, 2005. Acceptance of these approaches by the FERC will require the applicant to show how the proposal would promote efficient use of, and investment in, the transmission system and would also offer reliability benefits to consumers. The applicant must provide a cost-benefit analysis, including rate impacts, and explain why the proposal is appropriate for the RTO. The FERC will also consider various moratoriums on reducing transmission rates or the return on equity [each terminating by January 1, 2005] because of the possibility of increased risks from RTO formation.[48] The FERC also acknowledged that new approaches to setting the return on equity may be justifiable in providing transmission owners with the opportunity to earn a reasonable return on their investments.

---

[46] FERC Order 2000, 384.

[47] The FERC recognizes that "LMP can be costly and difficult to implement, particularly by entities that have not previously operated as tight power pools." (Ibid., 383.)

[48] The FERC recognizes that moratoriums may act contrary to promoting long-term efficiency through rate design.

The FERC sees two objectives of incentive pricing for transmission services. One is to induce transmission owners to participate in an RTO. The FERC argues that favorable ratemaking treatments for those who assume the risks of the transition to a new structure should eliminate any rate disincentives to RTO formation. In an important way, the FERC is relying on incentive rates to encourage RTO participation.

Less explicit and fundamentally different, the FERC hopes that incentive rates will also encourage transmission owners to expand their transmission capacity when warranted by market conditions. Constraints in transmission capacity can hinder competition in generation markets by increasing congestion cost and out-of-merit dispatch costs. The FERC believes it is appropriate to provide transmission owners additional incentives (e.g., non-traditional depreciation schedules) when they are willing to invest in new transmission capacity.

Filing Requirements

FERC requires that all public utilities that own, operate, or control interstate transmission facilities (except those already participating in a FERC-approved regional transmission entity) file by October 15, 2000, either a proposal to participate in an RTO or an alternative filing describing efforts and plans to participate in an RTO, obstacles to RTO participation, and any plans and a timetable for future efforts. A proposal to participate in an RTO can take the form of a declaratory order petition asking whether a proposed transmission entity that would be operational by December 15, 2001, would qualify as an RTO, with a description of the organizational and operational structure, a list of the intended participants in the institution, an explanation of how the institution would satisfy each of the twelve RTO minimum characteristics and functions, and a commitment to submit necessary FPA section 203, 205, and 206 filings

promptly after receiving the FERC's determination on the declaratory order petition.

A later January 15, 2001 deadline pertains to the filing date for existing, FERC-approved regional transmission entities. Those entities must still file to show that they meet all of the RTO requirements. To the extent that an existing ISO falls short of satisfying one or more of the necessary RTO minimum characteristics or functions, it should have a remedial plan to bring the ISO in conformance with the Final Rule.

The FERC requires all public utilities who participate in an RTO that will be operational by December 15, 2001 to implement the congestion management function within one year of startup (by December 15, 2002), and the parallel path flow coordination and transmission planning and expansion functions within three years of startup (by December 15, 2004). The FERC recognizes that RTO formation will be complicated by the FPA requirements for FERC approval of control of jurisdictional facilities under section 203 and FERC approval of RTO transmission rates, terms, and conditions under section 205. While the FERC cannot guarantee that it will respond to every RTO proposal within a pre-set period, it will make every reasonable effort to issue an initial order on an RTO proposal within sixty days after the comment period closes. If there are contested issues or provisions, the FERC intends to use alternative dispute resolution procedures, where warranted, to avoid initiating a formal hearing.

Role of State PUCs

Although the FERC believes that state commissions have important roles to play in RTO matters, it fails to identify a set of explicit state roles in the Final

Rule. The FERC recognizes that most state commissions (or legislatures) must approve a utility joining an RTO; many states have already required their utilities to turn over their transmissions facilities to an independent operator. Further, the FERC recognizes that state commissions must approve the siting of transmission facilities that may be called for in an RTO expansion plan. The reason for the FERC's relative silence on the role of the state PUCs is that the regional interests forming an RTO can consult with the states about what state role best fits the region's various state agencies' authorities and preferences and the organizational form of the RTO. Therefore, the FERC is taking a "flexible approach" that allows states to play appropriate roles in RTO matters, consistent with the FERC's *exclusive* responsibilities and authorities.

The FERC expects the state commissions to engage in or to endorse the RTO collaborative process and to encourage the formation of RTOs. The FERC discusses the role of state agencies in the governance of RTOs – reiterating the point that states will play a key role and should fully participate in RTO formation and development – but declining to specify generically a state's role in governance. But, according to the FERC, once an RTO becomes operational, most states would probably believe that it would be inappropriate for a state official to serve as a voting member of an RTO board. Three reasons are cited. First, it might create a conflict between the state official's duties as an RTO board member and his or her regulatory or legal responsibilities at the state level.

Second, in the case of a multi-state RTO, it would be difficult for an official of one state to represent the interests of other states. Third, allowing each state to have its own RTO board member could lead to large and unwieldy boards for multi-state RTOs. The FERC suggests it might be more acceptable for state officials to serve on user groups or serve as non-voting, ex officio board members. Nevertheless, the FERC does not impose a prohibition against state

officials being voting members of an RTO board by stating that it might be allowed under "special circumstances."

The FERC also encourages state commissions to create multi-state agreements to review and approve new transmission facilities that are proposed in the RTO planning and expansion function; and accordingly, the FERC includes a requirement that RTOs must accommodate efforts by state regulatory agencies to establish multi-state agreements for the purpose of reviewing and approving transmission facilities.

Overall, the Final Rule allows for flexibility as to the appropriate role of the states in RTO governance and operation (after RTO development and formation), particularly in those few areas where the FERC does not intend to exercise exclusive authority under the Federal Power Act. Stated another way, after RTO development and formation and, with the exception of reviewing and approving transmission facilities, the role of the states in RTO governance and operation might tend to be mainly advisory in nature.[49]

Market Monitoring

As discussed earlier, one of the minimum functions of an RTO is to monitor markets for the purposes of measuring market power, identifying market design flaws and proposing remedies.[50] Some commenters of the NOPR argued that because market monitoring provides a continual check on market activities, an RTO should have the authority to examine potential market power

[49] Currently, for example, state PUCs participate in PJM advisory committee meetings.

[50] In its NOPR, the FERC expressed the position that RTOs which are ISOs have a comparative advantage over other entities in monitoring markets.

abuses or flaws and to require market participants to provide pertinent information.

Questions by commenters centered on several aspects relating to the functions of RTO market monitoring: (1) Should the role of RTO monitoring be to actively search out market flaws or to act more passively as a policeman looking for obvious abuses?[51] (2) Should RTO monitoring be limited to information gathering or should it be as expansive as enforcement? (3) Is RTO monitoring a form of back-door regulation, which can be unduly burdensome, overtaxing and costly to consumers? (4) Can a for-profit RTO objectively monitor itself? (5) Would internal RTO monitoring inclusive of enforcement authority devolve into re-regulation and raise conflict of interest issues?[52] (6) Should the RTO report the results of is monitoring activities to both the FERC and state PUCs?[53]

The commenters of the NOPR generally agreed that an RTO should not assume the role of a regulatory or antitrust agency by defending or prosecuting a suspected exercise of market power. This function is deemed by most commenters to fall outside the scope of an RTO's responsibilities and expertise.

In the Final Rule, the FERC identified two legitimate functions of RTO market monitoring. First, monitoring of markets within the area covered by an RTO can help to prevent undue discrimination or the opportunity for the exercise of market power. Second, monitoring provides vital information pertaining to opportunities for efficiency improvements.

---

[51] The U.S. Department of Justice argued that RTOs lack experience in both detecting exercises of market power and in making recommendations on correcting market power problems.

[52] This question was raised by the Federal Trade Commission.

[53] PJM, for example, believes that it should.

Compatible with the general tone of flexibility throughout the Final Rule, the FERC will give deference to market monitoring plans agreed to by RTO participants. Although the FERC did not prescribe a particular market monitoring plan or specific components of such a plan, it identified standards that a plan must satisfy. One of these, for example, requires the filing of reports on opportunities for efficiency improvement, market design flaws and market power abuses in the area of the RTO's jurisdiction.[54]

Overall, the FERC rules that a market monitoring plan must represent an objective source of information for observing markets. The FERC believes that an RTO will be the appropriate entity to carry out objective monitoring functions for markets under its operation or administration. The FERC emphasizes that RTO market monitoring will not usurp its authority – the FERC retains ultimate authority; instead, the RTO's function will act to supplement FERC's function in detecting market power abuses, market design flaws, and opportunities for improvements in market efficiency.

6. REFLECTIONS

Major Issues for State PUCs

The FERC recognizes both the importance of state commission encouragement and participation in the development and formation of RTOs and state commission exclusive jurisdiction over the siting of transmission facilities. The FERC does not appear, however, to encourage other state

[54] Other standards include the availability of objective information and an evaluation of the behavior of market participants.

commission involvement in RTO governance during RTO operation, except perhaps on advisory committees, in non-voting roles, or in voting roles under special circumstances. This limited state commission role in the operation of RTOs does not reflect state commission interest in the proper operation of regional transmission facilities. For example, one major issue for state commissions concerning RTOs involves market monitoring of the regional transmission and bulk power markets. No one state commission alone will be able to properly monitor regional markets, but state retail electricity markets will rely heavily on the wholesale power markets. Should those wholesale markets be subject to market power, or to some type of anticompetitive exclusionary behavior, state commissions and their state attorneys general will have a direct interest in making sure that the behavior is uncovered and corrected. After all, it is the retail customers who are ultimately affected. It is therefore likely that state commissions will be more vigilant in overseeing the market monitoring functions of the RTO than the FERC. Indeed the FERC intends to entrust market monitoring back to the RTO as a self-regulatory function, with only periodic audits. State commissions might determine that they want to participate more actively in RTO market monitoring than the FERC's self-regulatory scheme seems to call for.

State commissions will take a special interest in the congestion management planning of the RTOs, particularly if it results in retail customers either directly or indirectly paying additional congestion management charges for what they would normally expect as retail electricity service. In particular, state commissions will need to work in concert with the RTO to make certain that congestion management plans can result in real demand-side responses by retail customers. State commissions might do this by encouraging real-time,

time-of-use, or seasonal prices, as well as through a wide variety of demand-side management policies.

State commissions also have a critical role to play not only in deciding whether transmission facilities are to be sited but also in the determination of who will pay for the transmission facilities (wholesale versus retail customers) and whether specific generation options, such as properly located distributed generation in or near load centers or load sinks, are more desirable alternatives. State commissions also play a major role in writing interconnection rules for distributed generation. If these rules are overly stringent, they could act as a barrier of entry to distributed generation.

State commissions will have a particular interest in the RTO operation of transmission facilities, particularly in states where retail customers receive bundled electricity service. FERC Orders 888 and 2000 made it clear that RTOs are expected to set both wholesale and unbundled retail transmission rates. State commissions have the authority to set bundled retail transmission rates. In setting these bundled transmission tariffs, the RTO would require state commission approval; yet, the FERC is requiring bundled and unbundled tariffs to be non-discriminatory, raising the specter of federal preemption.

State commissions and their retail customers are directly affected by reliability problems whether short term or long term. Indeed, it is the state commission that enforces the obligation to provide safe and reliable service to retail customers. Retail customers contact their state commission when outages occur. Therefore, state commissions have a great interest in the reliability functions of the RTO. Many state commissions are already implementing outage and reliability standards that address system-wide reliability, not just distribution reliability.

The main argument presented here is that for each of the four minimum characteristics and eight minimum RTO functions, a state interest is also served, which in some instances is as strong if not stronger than the interests of FERC. State commissions might not be content with the self-regulatory organization that RTOs represent and, instead, might prefer closer state oversight, perhaps on an interstate compact basis, or with state commissions acting in tandem. Impending federal legislation provides the state commissions, either individually or through its National Association of Regulatory Utility Commissioners (NARUC), with an opportunity to voice their position that state interests in RTO operations should be properly represented and addressed.

Possible Effects of the Final Rule On Industry Organization and Performance

Trying to predict the effect of the Final Rule on the electric power industry is difficult for two major reasons. One is the uncertainty over whether transmission owners, particularly those that are not currently members of an ISO, will be motivated by the Final Rule to form an RTO. An argument can be made that many will be. By providing specific guidance, the Final Rule should reduce the costs of market participants and other interested entities to negotiate an agreement on the formation of an RTO.[55] Clearly, Order 2000 provides parties with specific guidelines on the features and functions of an acceptable RTO. In addition, the FERC has made it clear that it expects all regions to form RTOs and will exert its fullest authority to make this happen. Initially, the FERC

[55] The FERC believes that its Final Rule struck a proper balance between rigidity and specificity by offering a "minimally intrusive, solution-oriented approach that provides guidance and specifies only the fundamental RTO characteristics and functions." (FERC Order 2000, 129.)

will rely largely on the "plum" of innovative transmission prices to help elicit utilities' participation in RTOs.

One cannot with any degree of accuracy measure how much the Final Rule will accelerate the development of RTOs. With more certainty, one can say that the Final Rule will make it more difficult for a region to *not form* an RTO. But whether this will be a decisive factor in establishing more RTOs at an earlier point in time is debatable. In making RTO formation voluntary, the FERC is relying on the carrot of incentive rates along with the threat of mandating action if nothing is done.[56] A worst-case scenario for the FERC would involve "no one showing up to the party." While this scenario seems highly unlikely,[57] a more plausible outcome is that those regions in the country which up to now have been reluctant to form an RTO will continue to be wary.

The FERC emphatically stated it plans to use its authority to order RTO participation on a case-by-case basis to remedy documented discriminatory behavior. How about the situation where certain regions of the country decide not to form an RTO, and the FERC has inadequate evidence of discriminatory behavior? Would the FERC proceed to develop a record in support of RTO formation on the basis of expected benefits? If not, then the current situation where most regions of the country do not have an RTO may continue indefinitely. At this time, it is not clear that FERC's "encouragement, guidance, and support" will necessarily elicit RTO participation in those regions currently without independent system operators (ISOs) or other forms of RTO-type

[56] The FERC will also consider on a case-by-case basis whether RTO participation should be a condition for mergers or acquisition approval, market-based rate approval, or as a remedy for a discrimination complaint.

[57] It should be noted, however, that the FERC's encouragement of the voluntary creation of Regional Transmission Groups met with less than an enthusiastic response.

institutions. Overall, incentives through favorable ratemaking along with the threat of FERC-mandated RTO participation as a last resort may fail to sway currently skeptical utilities.

A positive outcome of the Final Rule is not only conditioned on the response rate of transmission owners; it also depends on the effectiveness of RTOs to actually improve the performance of the electric power industry and consumer welfare.[58] If, for example, the benefits of an RTO relative to other forms of transmission organizations are minimal, or much less than predicted by the FERC, then the overall improvements engendered by the Final Rule may not be that great and, conceivably, much smaller than envisioned by the FERC. The FERC makes a strong and persuasive case for the formation of RTOs, emphasizing the large benefits to be gained.[59] Of course, one can reasonably respond that if RTOs are so efficient and attractive, transmission owners would eventually realize this. But, as a rejoinder, even if they did, it may not be in their self-interest to form an RTO. Consequently, the Final Rule seems to reflect the FERC position that, *prior to the Final Rule, the transmission owners in many regions of the country just did not have a strong enough incentive to form*

[58] RTOs may improve industry performance for several reasons: (1) increased size of the market area, (2) reduced market transaction costs (from additional and more accurate market information, and one-stop shopping for transmission services), (3) better pricing of transmission service (especially in accounting for congestion), (4) extended benefits, depending on transmission organizational structure, to generation and ancillary service markets, (5) reduced uncertainty for market participants in forming an RTO (via FERC guidelines), and (6) accelerated development of a socially preferred transmission-organizational structure.

[59] In essence, the FERC presumes that when owners give up control of transmission operation the performance of wholesale power markets will improve. Some commenters, such as Paul Joskow, pointed out the rarity of market organizations separating asset ownership from operation.

transmission organizations that would best serve the public interest. Essentially, the FERC in promulgating the Final Rule hopes that utilities will be more favorably inclined toward forming RTOs. As with most governmental actions, the Final Rule hopes to unlock the clash between self-serving private interests and the public interest.

The risk associated with the Final Rule, as with any governmental action, is that it will make matters worse. Specifically, the Final Rule may impose constraints on a utility's actions that would prevent it from pursuing a more socially desirable outcome. For example, placing wide-ranging and consequential responsibilities on a not-for-profit RTO to operate a transmission network conceivably can produce inefficiencies owing to weak incentives and the high concentration of market power potentially held by this single entity. For example, this entity may lack the correct incentives to sufficiently consider the efficiency outcome of its decisions. The FERC is placing a great deal of faith on RTOs to create a more efficient and reliable transmission system even though under some FERC-approved organizational structures this may not automatically or ever be achieved.

In allowing considerable flexibility, the FERC minimizes the chances that the hypothetically optimal or otherwise implemented transmission organization will fall outside the dictates of the Final Rule.[60] Of course, the FERC's vision of an acceptable regional transmission organization may turn out to be mistaken.

The biggest danger associated with the Final Rule may lie with its acceptability of a not-for-profit RTO, with diverse stakeholders affecting decisions, that will have extensive authority in controlling a regional transmission

[60] A contrary argument is contained in Carmen L. Gentile, "Let the IOUs Lead the RTOs," *Public Utilities Fortnightly* (March 15, 2000): 38-41.

system.[61] To some observers, this outcome reflects the antithesis of the ongoing evolution of the electric power industry toward less centralization and more market-based competitive features. In effect, the Final Rule will allow an entity, say, an ISO, to control critical network functions, while at the same time the entity's incentives and non-asset owning status may resemble more the features of a government bureaucracy than of a corporate entity.[62] The conceivable negative outcome from such a transmission organization may constitute the most legitimate concern with the Final Rule.

[61] The property-rights literature also reveals the problem of government diluting the rights of ownership. In virtually all markets, consumers participate in the management decisions only when they are owners of the supplying firms. While broad representation in managerial decisions may have some merits, it is a two-edge sword with likely adverse consequences for efficiency.

[62] See, for example, Robert J. Michael, "The Governance of Transmission Operators," *Energy Law Journal* 20, 2 (1999): 233-262.