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Moving Toward Seamless Energy Markets: Evidence from the Northeast

Impediments to interregional trade in energy and related products—or "seams issues"—threaten to undermine the efficiency and reliability benefits of competitive wholesale energy markets. Many have looked to the relatively mature Northeastern energy markets for guidance.

Michael Bailey and Christopher Eaton

The past few years have witnessed an unprecedented move toward competitive wholesale energy markets around the globe. Several regions in North America have implemented or are planning to implement market infrastructure and complex energy trading arrangements to capture efficiencies while safeguarding reliability.[1] Efforts to restructure and deregulate the electricity industry across regions have taken on a diverse set of characteristics and have met with varying degrees of participation and success. By any measure, competitive markets have experienced considerable challenges in achieving their two primary objectives—economic efficiency and a reliable power system.[2] A particularly difficult challenge currently facing the industry is how to mitigate the adverse impacts caused by differences in policies, market rules, business practices, and information technology that constrain interregional or multiple-market trade. Such impediments to efficient and reliable trade in wholesale energy and related products are often referred to as "seams issues." In this article, we analyze seams issues relating to the structure and operations of the Northeastern energy markets (i.e., New York, New England, Mid-Atlantic, and

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Ontario) and their operators (the New York Independent System Operator [NYISO], Independent System Operator of New England [ISO-NE], PJM Interconnection [PJM], and Ontario Independent Electricity Market Operator [IMO]) and discuss several policy initiatives. Our purpose is to assess the extent to which energy markets in the Northeast are converging toward a seamless energy trading and transmission environment, and to advance the policy debate on market structure and operations seams issues in the region.

I. Seams Issues in the Northeast

Whatever their underlying form, seams issues threaten to hinder the development of regional markets and limit the effectiveness of market mechanisms to deliver efficiency and reliability benefits. The volume, diversity, and complexity of seams issues in the Northeast have frustrated attempts to identify and analyze the issues and to formulate appropriate policy alternatives. Below we introduce seams issues, provide an overview of the Northeastern energy markets, and discuss several structure/operation seams issues.

A. Understanding Seams Issues

For our purposes, a "seam" can be defined as a line formed by the abutment of two or more contiguous regions, which generally creates a weak or vulnerable area or gap. Thus, relative to competitive wholesale energy markets, we define seams issues as *impediments to interregional trade in and delivery of energy and related products and services which result in economic inefficiency and/or a threat to reliability.* From an economic perspective, these issues may take the form of transaction costs, barriers to trade, or negative externalities. They are interesting because of their adverse effects on both efficiency and reliability, as well as the policy challenges associated with developing workable remedies. At a time when jurisdictions across North America and around the globe are moving toward competitive wholesale energy markets—and, in some cases, retail competition—as the preferred model to facilitate exchange, seams issues have emerged as key barriers to success. In recognition of the negative impacts of seams issues, the U.S. Federal Energy Regulatory Commission (FERC) made interregional coordination and the elimination of seams issues a major part of Order 2000, which encourages the formation of regional transmission organizations (RTOs).[3]

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There is ample evidence linking seams issues with transaction costs, other sources of market inefficiency, and threats to reliability. Regulatory orders and studies of the wholesale electricity markets in the U.S. recognize that progress has been made to facilitate interregional trade, but also point to several seams-related areas for improvement.[4] Assessments by reliability groups show that market-based business practices and trading patterns are increasingly testing the capabilities of North America's aging transmission grid.[5] Industry leaders and analysts—from both the ISOs and market participant organizations—acknowledge the importance of resolving seams issues and are working toward solutions.[6] There is widespread agreement on the prevalence of seams issues and their adverse effects. Some progress has also been made in identifying and addressing these issues. What has been lacking to date is a rigorous analysis of seams issues and policy initiatives in each region.

To facilitate the analysis, we have developed the following analytical framework, which divides seams issues along two axes: *configuration/transition* and *structure/operation* (see **Figure 1**).

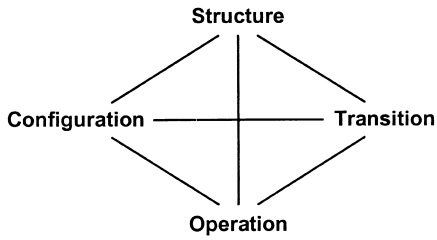

Figure 1: Seams Issue Analytical Framework

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