Towards Dynamic Markets in Electric Power, Water, and Wireless Spectrum
Tuesday, April 23, 2013

Reading List

In this conference, we will bring together experts in the different domains to look at the development in markets in the electric power, water, and wireless spectrum arenas. In so doing, we will evaluate comparisons between the economics of each to evaluate the particular challenges in each domain and to investigate better practices going forward. The main questions to be explored include: How do you design a market? What are the consistencies that the secondary users have to respect (think interference characteristics in spectrum and return flows in water)? What forces drove and are driving the development of each of these markets?

This memo offers participants background reading and references, which have been organized in reverse chronological order. We have marked priority readings with an asterisk (*); for quick reference, they are:

Priority Readings
*Holly Doremus, "Climate Change and the Evolution of Property Rights," 4 U.C. Irvine L. Rev. 1091, 1117-1120 (Jan. 16, 2012), available at http://www.law.uci.edu/lawreview/Vol1No4Articles/Doremus.pdf.

*Brandon Scarborough, "Environmental Water Markets: Restoring Streams Through Trade." PERC Policy Series., No. 46 (2010), available at, http://perc.org/articles/environmental-water-markets.

*United States of America Federal Energy Regulatory Commission, "Enhanced Natural Gas Market Transparency," Comment of the U.S. Department of Justice (Feb. 1, 2013), available at http://www.justice.gov/atr/public/comments/292131.pdf.

*Peter Cramton, et al., "Using Spectrum Auctions to Enhance Competition in Wireless Service," (Feb. 2011), available at http://www-siepr.stanford.edu/repec/sip/10-015.pdf.

Readings by Topic

Water

*Holly Doremus, "Climate Change and the Evolution of Property Rights," 4 U.C. Irvine L. Rev. 1091, see 1117-1120 (Jan. 16, 2012), available at http://www.law.uci.edu/lawreview/Vol1No4Articles/Doremus.pdf.

- Doremus posits that markets will not sufficiently protect the collective interests that climate change will endanger.
- The article explores the history of water rights, including prior appropriation, and the legality of water markets.
- This article examines the strengths and weaknesses of water markets in regulation and allocating.

Felicity Barringer, "Storing Water for a Dry Day Leads to Suits," The New York Times, (July 26, 2011), available at http://www.nytimes.com/2011/07/27/science/earth/27waterbank.html?pagewanted=1&hp%7C&_r=0.

- This article explores water banking as a tool for making water supplies reliable, sustainable, and marketable.

Martin D. Heintzelman, "A Theoretical Analysis of Bargaining and Interstate Water Compacts" (2011), available at http://ssrn.com/abstract=1803647.

- This article discusses the conflict of property rights for existing freshwater resources, such as interstate rivers - compare to adjacent spectrum bands.
- This article analyzes the negotiation of these interstate compacts, primary result is a theoretical model that shows that compact allocations tend to favor equitable allocations over efficient allocations - compare to incumbents and new entrants.

Jeremy Williams, "Water Allocation and Management: Southern States Outlook," Southern Legislative Conference of the Council of State Governmentsa (May 2010), available at, http://www.slcatlanta.org/Publications/EnergyEnvironment/WaterWeb.pdf

- This article examines water scarcity in the southern states and discusses water allocation.
- Inefficient use of water, poor cost recoveries, and other issues have led to a search for alternatives for water allocation and management.
- This paper presents a case study of the Colorado River States.

*Brandon Scarborough, "Environmental Water Markets: Restoring Streams Through Trade," PERC Policy Series, No. 46 (2010), available at, http://perc.org/articles/environmental-water-markets.

- This article looks at the developing institutional strategies for restoring and preserving instream flows.

- Scarborough investigates how markets can equitably and efficiently allocate water between competitive demands and incentivize improved efficiencies and conservation.

Eric Heymann, Deidre Lizio, & Markus Siehlow, "World water markets: High investment requirements mixed with institutional risks," Deutshche Bank Research, (June 1, 2010), available at http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000258353.PDF.

- This article explores the global need for investment in water markets and the challenges surrounding funding.
- The paper argues that water prices in many areas are subsidized and too low, which causes a lack of incentives for necessary investments.

Jonathan Adler, **"**Warming Up to Water Markets." Cato Institute (Winter 2008-2009), available at, http://www.cato.org/sites/cato.org/files/serials/files/regulation/2008/11/v31n4-3.pdf

- This article explores how global climate change will affect freshwater supplies and how water markets can help address the impacts of climate change on water availability and scarcity in the United States.
- Water marketing and market pricing can improve the management of water supplies and the efficient allocation of available supplies and encourage cost effective conservation measures.

Electricity/Energy

*United States of America Federal Energy Regulatory Commission, "Enhanced Natural Gas Market Transparency," Comment of the U.S. Department of Justice (Feb. 1, 2013), availalbe at http://www.justice.gov/atr/public/comments/292131.pdf.

- DOJ is commenting on FERC's call for comments on possible changes to its regulations under the natural gas market transparency provisions of the Natural Gas Act.
- FERC is considering requiring transparency for every natural gas transaction that entails physical delivery.
- DOJ is concerned with the competitive effects on the public availability of such reports and the risks of coordination and higher prices for consumers caused by the detailed transaction-specific information.
- DOJ recommends certain safeguards against coordination, including mitigating the risk of anticompetitive effects by releasing the information only in limited circumstances and maintaining some confidentiality or aggregating, masking and/or lagging the release of the information.

Richard J. Pierce, Jr., "A Primer on Demand Response and a Critique of FERC Order 745," J. Energy & Envtl. L. (Winter 2012), available at http://groups.law.gwu.edu/JEEL/ArticlePDF/3-1-Pierce.pdf.

- This article presents the economic and legal principles of demand response and is an attempt to make the concepts more accessible to market participants, policy-makers, and the public

Hunt Allcott, "Real-Time Pricing and Electricity Market Design" (Aug. 26, 2012), available at https://files.nyu.edu/ha32/public/research/Allcott%202012%20-%20Real-Time%20Pricing%20and%20Electricity%20Market%20Design.pdf.

- This paper considers two related distortions in electricity markets: the lack of real-time retail pricing and the suppression of peak wholesale prices due to Installed Capacity requirements.

Dallas Burtraw, et al., "Electricity Restructuring: Consequences and Opportunities for the Environment" (September 2000), available at http://www.rff.org/RFF/Documents/RFF-DP-00-39.pdf

- The paper explores the deregulation of the electricity industry and the effect on incentive to reduce pollutants.
- "Competitive could also bring about the development of a thriving market in energy services"

Global Energy Advisors, "Putting Competitive Power Market to Test - The Benefits of Competition in America's Electric Grid: Cost Savings and Operating Efficiencies" (July 2005), available at http://www.epsa.org/forms/uploadFiles/506A00000029.filename.Final_Report_-_070805.pdf.

- Discusses wholesale power markets and states that they have benefited consumers as competition forced improvement of operating efficiencies.
- This seems less academic and more of a whitepaper, most data seems to have been generated or collected internal to the authors, not sure if this is what we want?

Spectrum

Eli M. Noam, "The Economists' Contribution to Radio Spectrum Access: The Past, the Present, and the Future," Proceedings of the IEEE Vol. 100, 1692-1697 (2012), available at http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6179295.

- This paper provides a historical review of the evolution of the economists' views on radio spectrum access, from the beginnings of commercial radio to the present day economic factors and concludes with the prediction of the emergence of user-fee spectrum access systems.
- The property-rights based exclusivity "inaccurately compares spectrum with land, when in actuality is resembles more closely airplanes in the sky which need to be steered clear of each other."

Carlos E. Caicedo & Martin B.H. Weiss, "The Viability of Spectrum Trading Markets," IEEE Communications Magazine, 46-52 (March 2011), available at http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=05457846.

- This paper seeks to determine the conditions for viability of spectrum trading markets by considering scenarios with different market structures, number of trading participants and amount of tradable spectrum.

*Peter Cramton, et al., "Using Spectrum Auctions to Enhance Competition in Wireless Service," (Feb. 2011), available at http://www-siepr.stanford.edu/repec/sip/10-015.pdf.

- This paper examines several instruments regulators can use to enhance competition and thereby improve market outcomes.

J. W. Mayo & S. Wallsten, `Enabling efficient wireless communications: The role of secondary spectrum markets,' Information Economics and Policy (2010), 22(1):61-72, availalbe at https://www.techpolicyinstitute.org/files/wallsten_mayo_0609.pdf.

- This paper categories and explores different types of secondary markets, including the operations of mobile virtual network operators, the machine-to-machine (M2M) market, and the explicit sale and lease of spectrum among third parties.

Gerald R. Faulhaber & David J. Farber, "Spectrum Management: Property Rights, Markets, and The Commons" (December 2002), available at http://ideas.repec.org/p/reg/wpaper/116.html.

- This article proposes a solution that can support private markets and accommodate the rapid diffusion of new radio technologies.
- This article discusses Ronald Coase's paper that proscribed the Coase Theorem to spectrum policy.
- This article discusses interference and states that radio interference is the spillover that is the primary rationale for government control of the spectrum.

Junjik Bae, et al., "Spectrum Markets for Wireless Services," available at http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.149.433&rep=rep1&type=pdf.

- This paper explores the consequences of lifting current restrictions on allocations and ownership, and allowing more extensive markets for allocating spectrum across locations, times, and diverse sets of applications (e.g., broadcast, cellular, broadband data, emergency, etc.).
- Further, this paper presents a two-tier spectrum market market structure for wireless services in which licenses for spectrum assets at particular locations are traded as commodities. Spectrum owners can choose to rent or lease their spectrum assets via spot markets at particular locations. Such an approach may lower barriers to entry into the wireless services market thereby facilitating competition and the introduction of new services.