## BOOK REVIEWS

***Competitive Electricity Markets and Sustainability,*** edited by FRANÇOIS LÉVÊQUE (Cheltenham and Northampton: Edward Elgar, 2006) 302 pages. Hardcover ISBN-13: 978 1 84542 921 8.

This collection has nothing to do with sustainability as the word is commonly used in an environmental context. Instead, it addresses the conditions under which liberalized electricity markets result in sustainable investment that maximizes social welfare. After an introductory chapter, this book contains three pairs of papers addressing the generation, transmission, and joint generation-transmission investment problems. Each pair contains a theoretical and an empirical chapter.

Richard Green analyzes investment in generation capacity employing a load duration curve, which power system engineers and planners have been using for many years. He first solves the problem under certainty and concludes that the market, at least in theory, will send adequate signals for the optimal level and mix of capacity. Green then overlays his analysis with a real options approach to account for uncertainty. This modifies his investment under certainty conclusion with the finding that the price at which investment becomes attractive is higher than the price needed for the plant to just cover its costs, since there's a risk that prices will decline in the future. In addition, it's not rational to close plants as soon as electricity prices fall below the plants' going forward costs since prices might rise in the future.

Green also conducts an empirical analysis by examining investment patterns in liberalized electricity markets. He concludes that each country is affected by its own specific background, making generalizations dangerous. He also finds that liberalization has often been accompanied by reductions in capacity margins, but these margins have not generally fallen to the level that posed a danger to security of supply. He does caution that the market-based experience with generation investment is limited, and he does not know whether investors will reenter the markets in the United Kingdom and the United States when new capacity is needed.

Jean-Michel Glachant performs a comparative analysis of different technologies of generation investments during the 1990s. He concludes that competitive reforms have been accompanied by strong preferences by investors for gas-based generation technologies, in particular combined cycle plants. The author then notes the bursting of the combined cycle investment bundle and the financial crisis confronting independent power producers, including the bankruptcy of Enron and the collapse of the merchant plant plus trading model. He also explains why nuclear has not been cost competitive when compared to natural gas.

Looking back, some have argued that liberalization has resulted in too much investment in natural gas, but at least in the U.S., nuclear was (but not now) off the table. It is not clear, therefore, that if restructuring had not occurred during the 1990s that natural gas-fired combined cycle power plants would not have been the technology of choice under cost-of-service regulation. Perhaps without liberalization, more coal fired power plants would have been built because utilities could have recovered the higher capital costs under cost-of-service regulation than independent power producers could have in electricity markets. If this had happened, however, society would be facing an even greater challenge with respect to global climate change than it currently is with liberalization. Furthermore, the 1990s' history may not apply going forward because of today's much higher natural gas prices, a broadening consensus on global climate change, improved nuclear power plant performance and new designs, all of which make nuclear more attractive than it was in the past.

Part two of this collection considers the transmission investment problem, although both authors are acutely aware of the interdependence between transmission and generation. Stephen Stoft analyzes three approaches to transmission investment. The *planning approach* refers to a system that does not include any incentives specifically tailored to the long-run transmission investment problem. In this model, engineers and economists supervised by regulators build an efficient and prudent system supported by cost-of-service regulation.

The second model that Stoft considers is a *merchant approach*, which allows any private company to modify the transmission system subject to certain restrictions and rewards or punish such modifications by allocating transmission rights to investors. The third approach is *performance-based regulation*, which induces a for-profit owner of the transmission system to make the necessary transmission investments by having its profits adjusted based upon the cost and performance of the system.

Stoft emphasizes the importance of the relationship between market power and transmission investment and concludes that it's better to err on the side of overinvestment in transmission to help reduce the exercise of market power. He does not pass judgment on the effectiveness of market monitoring and mitigation policies. His analysis of the merchant and performance-based regulation approaches concludes that these models would result in underinvestment of transmission. This would seem to suggest that Stoft favors the planning approach, but he notes that under this approach, load and generation would lobby regulators for particular investments or postponement of investments that favor their individual interests but at the cost of an optimal generation and transmission grid. Not surprisingly, he concludes that the transmission investment problem will be a major issue for the foreseeable future.

Paul Joskow favors performance or incentive-based regulation but notes that there's no single mechanism that can be developed to govern transmission investment. Although Joskow notes that an attractive regulatory framework will accommodate merchant transmission investment, he is quick to point out that he

does not believe that merchant transmission will play a major role in transmission investment. He also notes the bifurcation of regulatory responsibilities between the US and the states, and in Europe between Brussels and its member countries.

Joskow considers three models for transmission network organization: vertical integration, the independent transmission company (Transco), and the ISO. He clearly favors the Transco model and points to England and Wales as the most successful liberalization effort in the world. His paper also reviews market restructuring transmission policies in PJM. He concludes that better understanding of the costs and benefits of reliability criteria is needed along with improved economic models that take into account the factors that create a need for administratively imposed reliability criteria. These two conclusions are particularly importance because too frequently, reliability and economics are separated. Reliability is considered a hard constraint, and its economic costs are rarely considered with some exceptions. For example, the New York ISO has adopted scarcity pricing, which adjusts the dispatch of the system by relaxing reliability rules if those rules result in a cost above the estimated benefit of that reliability constraint. Joskow is taking this point and is extending it to planning and transmission investment.

The book's final section integrates transmission and generation and presents a theoretical model that combines these two aspects of the power system. Extending previous work that addresses the indivisibilities in the unit commitment problem, Yves Smeers addresses the joint generation-transmission problem. Smeers concludes that in the same way as congestion charges need to be set in order to get energy prices right, transmission access charges also need to be set in order to induce optimal investments in the grid. He finds that it's possible to decentralize lumpy investment in the grid provided one invokes a more complex set of prices that covers not only congestion but also access charges.

The final paper also considers the integrated problem but in a more empirical context. Ignacio Pérez-Arriaga and Luis Olmos observe that the certainty regarding generation investments in the past with traditional centralized planning no longer exists. This adds some complexity to the transmission expansion problem, which is important given the difference in construction time of transmission and generation facilities. The installation of the transmission network is such that long-term locational signals are needed, and they can be clearly identified or more truly identified in the allocation of transmission costs, which need to be based on location. The emphasis of their proposal is to identify the incremental grid costs that a generator imposes upon the system when locating at a given node while keeping in mind that the key driver behind the network charges should be cost causality. Their basic finding is that efficient investment and generation can be encouraged by the use of nodal energy prices combined with transmission tariffs that have location-based charges.

The joint generation-transmission investment problem in partially liberalized electricity markets remains to be solved both in theory and, more importantly, in practice. The one major aspect of this problem that this book does not address is demand response by retail load. This collection of papers, by starting

with the generation problem, articulates the key issues and proposes some credible approaches.

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***The Politics of the Environment: Ideas, Activism, Policy,*** by Neil Carter. (Cambridge University Press, 2nd Edition, 2007, ISBN 0-521-68745-4, 432 pages, Paperback $34.99).

We are currently seeing a growing concern over the global environment and climate change, reflected in the recent Nobel Peace Prize for work on global warming. Neil Carter's timely second edition textbook provides an excellent introductory examination of the politics of the environment. The broad scope of topics covered will serve undergraduates well, while the corresponding extensive bibliography will likely be useful for more advanced students. A general audience may also find the chapters on the history of green politics, sustainable development, and globalization to be both interesting and accessible.

The text is organized into three sections, respectively centered around *Ideas*, *Activism*, and *Policy*. The body of the text is well written, and accessible at the introductory level. More complicated ideas and definitions are set off in boxes allowing students to digest the meat of the concept before tackling more complex discussion. In addition to the "critical questions" supplied at the end of each subsection, stimulating questions are also woven into the narrative of the text. While these discussions within the text will likely prove to be excellent fodder for class discussion, there are times (particularly in Part 1) when it can be difficult to distinguish between the narrative voice of the author describing other peoples' ideas and the editorial voice critiquing those ideas. That said, the author's willingness to take suspect theories out to the woodshed for a sound rhetorical questioning will likely engage students' minds.

Part 1 introduces students to the various theories of the environment, and groups these theories into a political ideology called "ecologism." The author argues with some success that "ecologism" comprises a distinct political ideology on the grounds that it critiques the current system, provides a utopian vision and proposes the steps required to get there. The author also spells out many of the conflicts within "ecologism." For example, the question of radical change outside the system versus reformist incrementalism from within is a common theme throughout the book. The author also critically examines common green claims that a green society will be egalitarian, democratic and decentralized. This section of the book would have been strengthened with further discussion of how popular or widespread these various green theories are within the general public (i.e. how many

*deep ecologists* or *ecofeminists* are there?). The absence of this sort of discussion leaves this section feeling a bit academic. When 20 million people marched at the first Earth Day in 1970, were they motivated by ecoanarchism, or were they tired of having to chew the air in urban centers and rivers catching fire?

In Part 2, students are introduced to how the ideas presented in Part 1 have been translated into action. The first two chapters provide a cross-country analysis of the successes and failures of green parties, and to what extent existing mainstream parties have responded to the challenges of green parties by "greening" themselves. The third chapter in this section considers the impact of environmental groups (Greenpeace and such), and contrasts the institutionalization of many larger organization with the rise of decentralized "eco-warrior" groups such as Earth First! This theme of radicals versus reformists permeates this entire section of the book and will likely spark lively discussion. For students (and instructors such as myself) too young to remember the anti-nuclear origins of the green movement or the eco-stunts of groups like Greenpeace, the broad coverage and historical context in this section is welcome. That said, environmental politics outside of Europe, North America and Australia are largely ignored. Some discussion of environmental politics outside of these wealthy, industrialized, liberal democracies would have been very welcome (a discussion of environmental issues in China would have been particularly enlightening).

Finally, Part 3 rounds out the majority of the book with an introduction to how environmental policy does (or often does not) get made. The first two chapters explore the traditional policy paradigm, with its focus on a zero-sum relationship between the economy and the environment, and contrasts this traditional structure against the "sustainable development" and "ecological modernization" paradigms. The next chapter is devoted to global environmental politics and international agreements, followed by a chapter with an evenhanded discussion of the issues surrounding globalization, trade and the environment. Part 3 concludes with a discussion of how governments actually make environmental laws. Though brief, the final chapter in particular clearly spells out the various regulatory regimes and policy instruments available to policymakers, and provides an introduction to the pros and cons of contrasting approaches.

Unfortunately, economists will be dismayed to find no mention of Coase or property rights in this final chapter, and the topic is barely broached throughout the book. Free-market environmentalism is dismissed rather offhandedly as a belief that the market will figure everything out, with very little discussion as to the origins or reasons behind that belief. The idea that replacing open access resources with a property rights regime may improve environmental outcomes is an idea that would likely challenge many students' existing conceptions and deserves a fuller hearing.

This text is clearly written for a political science audience, and as such it will likely not find much use within traditional environmental or energy economics courses. However, chapters within Parts 2 and 3 in particular would serve as a useful primary or secondary text for an interdisciplinary undergraduate course on

environmental or energy policy. The broad cross-country scope, historical context and challenging questions contained within should provide students of various backgrounds with a broad understanding of environmental politics.

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