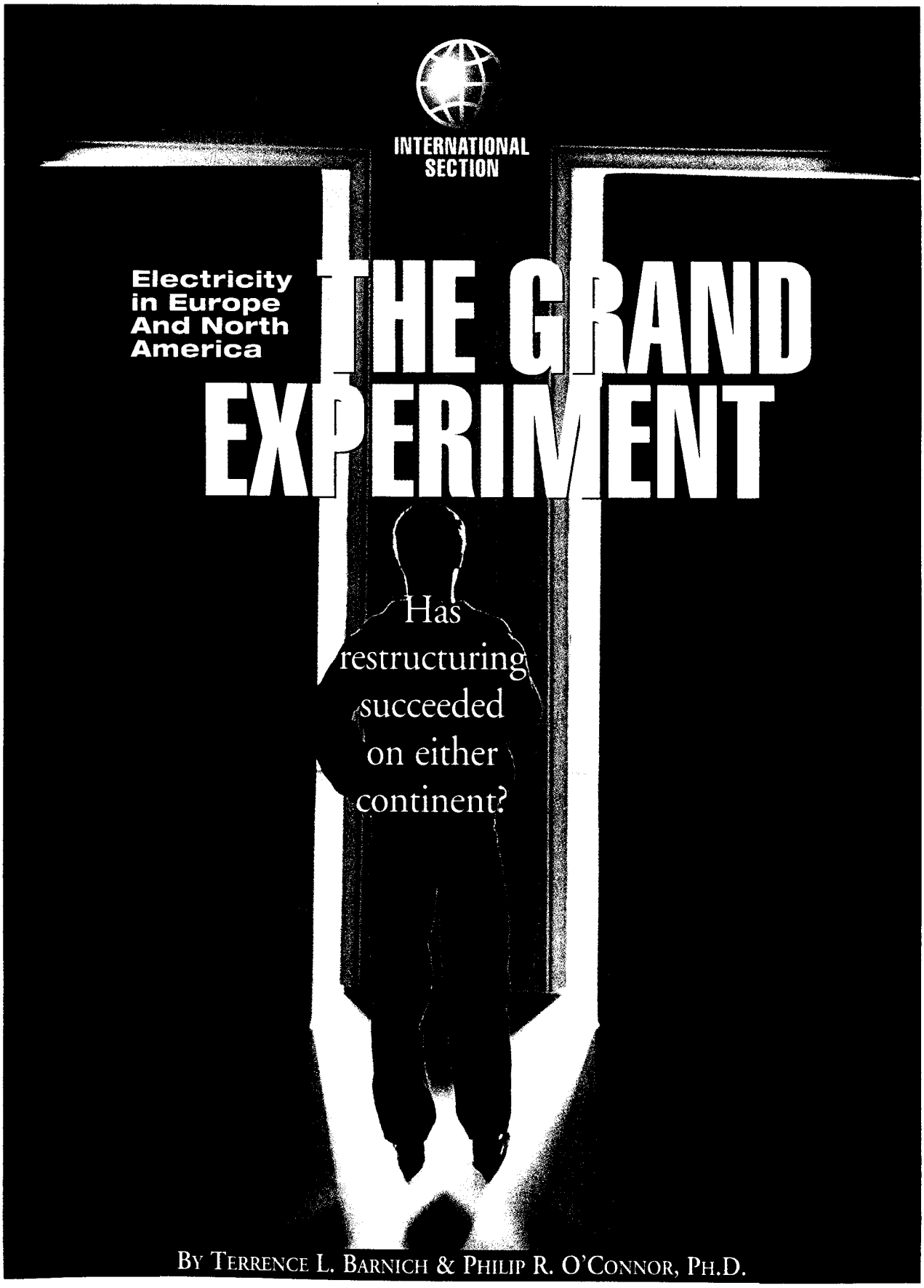

INTERNATIONAL SECTION
Electricity in Europe And North America
THE GRAND EXPERIMENT
Has restructuring succeeded on either continent?
BY TERRENCE L. BARNICH & PHILIP R. O'CONNOR, PH.D.

In 1984, the world of electricity was organized along the lines of a common model based on a shared belief that a specific industry structure was implied by the prevailing electric technology and financial requirements of the industry. A little over two decades later, the principles of the "Ten Point Plan" issued by the Illinois Commerce Commission are manifest in public policy and industry practice in both of the great federal politico-economic systems of the North Atlantic (*see, "The Original 'Ten Point Plan' of 1984, p. 68"*).

The European Union has promulgated competitive energy market policy directives for electricity that individual member states have implemented to widely varying degrees.[1] The United Kingdom, the Netherlands and the Scandinavian countries fully have implemented retail open access, while others have gone part of the way, allowed access nominally, or done relatively little. The EU is rife with internal controversy over large utility mergers and issues of de-verticalization.

An important feature of the development of the competitive model in Europe has been massive transfers of utility assets in some member states from government ownership to investor-owned status. In North America, while there has been less need for privatization, there has been, as in Europe, significant consolidation and streamlining of traditional utilities, as well as of competitive generation. As has been true in other competitizing network industries, commercial and industrial electricity customers generally have been the first movers in taking advantage of competitive options. Residential retail markets have tended to lag from place to place depending on rules of the game and other factors, including transaction costs.

In the United States and Canada, electric wholesale markets generally operate on a competitive model, with national level regulators and policymakers showing no sign of retreating to traditional cost-based regulation. In North America, individual states and provinces retain the legal authority, at the sufferance of their national legislatures, to implement retail choice and open access. State and provincial authorities also control sales of generation and delivery system assets, and retain a significant role in mergers and acquisitions. Europe and North America both suffer from various congestion points and also have points of integration that are more a function of geography than of national boundaries. For example, the Canadian and U.S. electric markets actually are more integrated on a north-south cross-border basis than on an east-west national basis.[2]

In North America, states and provinces accounting for just about half of all electricity consumption have adopted retail open-access policies whereas a decade ago, there was virtually no retail access. Similarly, whereas two decades ago about 90 percent of all generation was produced by plants owned and operated by classic vertically integrated utilities (with the other 10 percent accounted for by government entities), today that figure is closer to 60 percent. Nearly 30 percent of all U.S. generation comes from non-utility power plants.[3]

The question on the table is not whether there will be competitive markets in electricity, but to what extent and for how long the new paradigm and the old regime will co-exist. Hence, a grand experiment.

Ten Tests in the Grand Experiment

The era of polemics about competition in electricity industry is nearly over. We have passed through ridicule and violent opposition—the first two of Schopenhauer's three stages of truth. But we are short of the third: Acceptance by all as obvious. The old, shared certainties have been shattered and the time has come to compare the relative performance of competition and of traditional regulation as these two established models operate side-by-side.[4]

In the interest of symmetry with the original "Ten Point Plan," we suggest 10 tests as the grand experiment proceeds. The measures are, at this point, merely suggestive. They are, however, intended to be quantifiable and devoid of bias, providing a reliable basis for comparing the relative performance of the new paradigm and old regime.[5]

1) Power Plant Operating Efficiency

Which system will produce kilowatt-hours more reliably at the lowest incremental and all-in costs? Will there be different incentives and conditions affecting choices of power-plant types, staffing decisions, fuel contracting, and operating practices?[6]

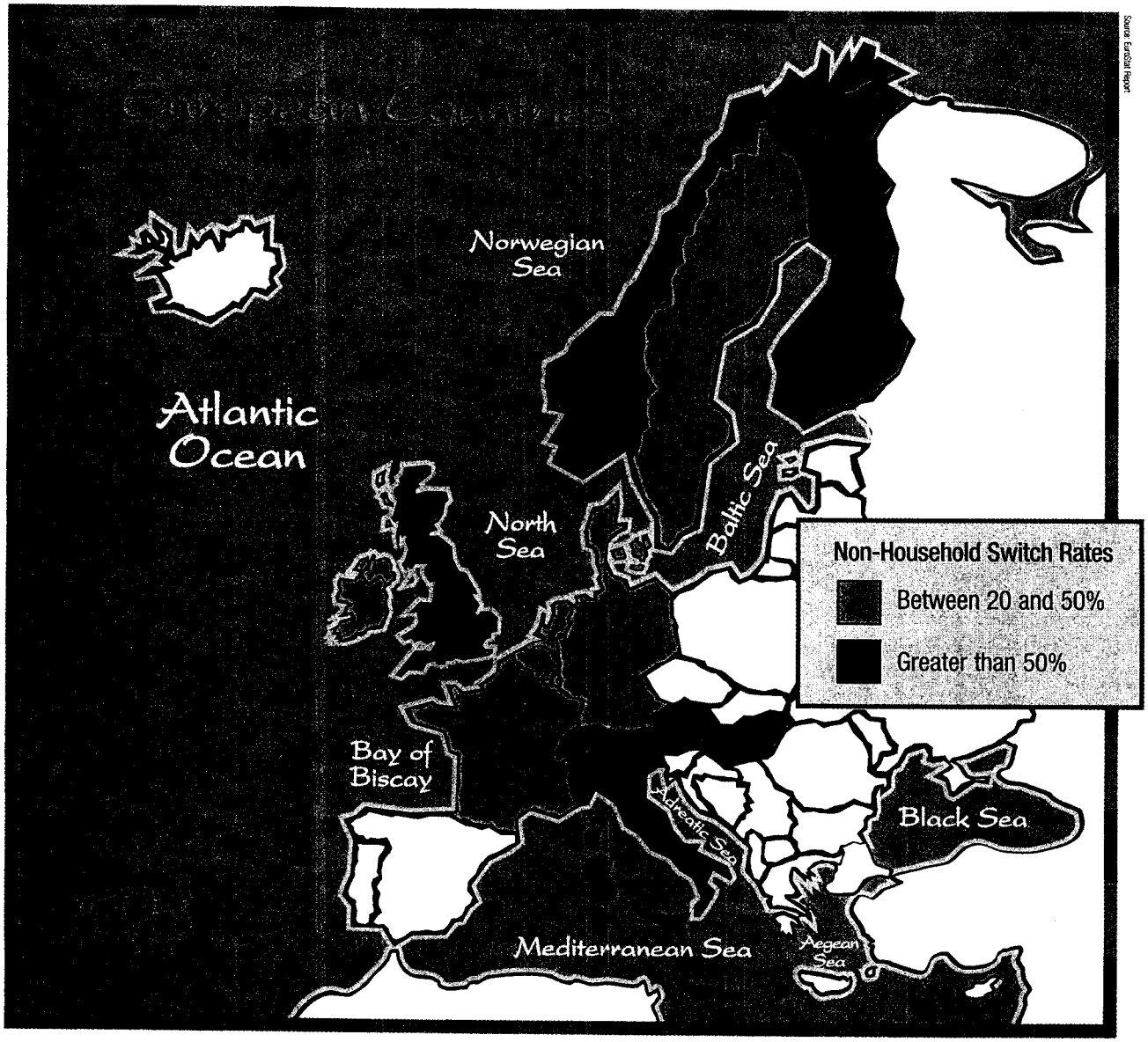
2) Attraction of Investment Capital

Which system can better create an environment in which financing can be secured for new generation additions? Large amounts of new generation were added in the later 1990s in response to the first open-access laws in such states as Illinois. Those additions produced reserve margins that, until recently, deferred talk of the need for new capacity. With wires companies remaining under more traditional rate regulation even under open-access conditions, which system will better provide for raising capital for power plants?

3) Curtailing Demand

Which regime can better address the perennial issue of improving customer load factors? Which can better apply such methods as real-time pricing, voluntary and involuntary interruption, and appeals to social responsibility? Which system can do the better job of encouraging end-use customers to reduce peak demand or to shift usage to off-peak?

4) Curing Congestion



Which system will better cure transmission congestion points and load pockets? Will one system better manage the vagaries of geography, population and demand growth?

5) **Reducing Emissions**

Which system will most cost-effectively control emissions from the production cycles of most electric generation? The success of sulfur dioxide emissions reduction trading, inaugurated under the 1990 Clean Air Act Amendments in the United States, has been coincident with the emergence of competition in electricity, but not dependent on electric industry restructuring. SO_2 trading has been emulated with other pollutants such as nitrous oxides and even mercury. Most recently, Europe has commenced CO_2 reduction trading.

6) **The Next Generation of Nuclear Power Plants**

Which industry structure will better accommodate a new generation of nuclear power plants? While other political, regulatory, environmental, technical, and financial issues will figure into the development of new nuclear plants, will an overlay of competition or traditional utility regulation be more hospitable?

7) **Reducing Inter-Class Cross-Subsidies**

Will one system or the other set prices more in keeping with cost-causation principles? A central tenet of competition advocates has been that market-based pricing conveys more accurate price signals that are linked to economic costs of service. On the other hand, some rate-regulation supporters may argue to the contrary, suggesting the need to more carefully incorporate "social costs." Others may favor assisting residential customers at the expense of business customers, or vice versa when it comes to certain industries regarded to be of

The Original "Ten Point Plan" of 1984

Looking back at how far we've come.

In 1984, the Illinois Commerce Commission (ICC) issued a "Ten Point Plan" for electricity competition predicated on:

- competitive commodity pricing at both wholesale and retail levels;
- non-discriminatory open access to common delivery networks;
- liberalized entry and exit of providers;
- freedom of contract between providers and end-use customers; and
- regulation focused on "rules of the game" for market functioning.

As straightforward as these concepts may seem today, in the early and mid-1980s they contradicted longstanding practice and expectations. The ICC's "Ten Point Plan" accepted as an initial condition the greater complexity of a competitive transition in the electric industry compared with natural gas, because of electricity's large sunk capital costs. The ICC proposed a stepwise transition of a logical sequence of moves over a number of years that eventually would lead to full open access and customer choice.

Reviewing the "Ten Point Plan" today, and considering the extent to which the electric industry in great part has been restructured along the lines of that plan, one is reminded of Schopenhauer's succinct description of the three stages of truth: First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident.

The 10 "sequential" points in the plan were:

1) Incentive rates to help utilities retain price-sensitive industrial customers as long as the reduced prices made a contribution to covering fixed costs;

2) Centralized dispatch among utilities in a state or region to ensure optimal utilization of power plants with the lowest fuel costs;

3) Power brokerage and auction markets as extensions of central dispatch to leverage the growing capability of computerized data management to account for large numbers of bilateral or pooled power transactions;

4) Realigned FERC and state authority so that individual states could better implement wholesale dispatch and auction regimes while FERC focused on interstate wholesale transactions;*

5) Interstate compacts that recognized the "paths of least resistance" in regional electricity flows so that states could share authority over common wholesale power brokerage and auction markets;

6) Wheeling of power on a non-discriminatory basis to allow customers and power suppliers to freely transact across increasingly larger market footprints;

7) Unbundling of rates to send accurate price signals about the various components of service, such as transmission, distribution, energy, and capacity, thereby clearing the "fog of regulation" that was distorting prices and obscuring costs;

8) Diversity and devolution of supply to introduce non-utility power plants into the market and encourage vertically integrated utilities to sell power plants or spin them off to affiliates, thus removing these assets from the regulated rate base and subjecting generation output to price discipline;

9) Contracting and off-system sales, permitting utilities to negotiate prices with individual customers both within their service territories and beyond; and

10) Spot and futures markets that allow for bilateral as well as "trading floor" transactions by customers, power suppliers, and speculators to engage in price finding and hedging and a more accurate determination of future energy and capacity value. —*TLB & PRO*

Endnote

1. FERC realignment and interstate compacts, as suggested in Points 4 and 5, largely were intended to convey the idea that the states were capable of formulating and implementing competitive reform within their own boundaries. The traditional legal fiction has been that transactions between utilities in the same state as well as across state boundaries were both inherently implicated in interstate commerce and therefore subject to congressional regulation by delegation through FERC. Points 4 and 5, along with Points 2 and 3, eventually were subsumed in practice developed under Point 6 through the creation and operation of regional transmission organizations (RTOs). Numerous states have required or permitted their local utilities to join RTOs overseen by FERC and through which the wholesale market and open-access wheeling of power operates under competitive conditions across much of the United States.

strategic importance or matters of local or national pride.

8) Low-Income Customer Connectivity

Which system will do a better job giving low-income customers access to essential electric service? In North America and in the EU, most residential electricity customers are not poor and are quite able to pay both for basic amounts of power and for purely discretionary usage. However, one widely shared objective is to better ensure that the poor can be connected to the network and have basic services available. Will one regime or another employ more creative and effective measures and leverage technology in pursuit of that goal?[7]

9) Customer Satisfaction and Minimizing Political Controversy

Which approach will make for happier customers and less-agitated policymakers? Customer satisfaction research is widespread in the electric business, as it is elsewhere in the economy. Levels of customer satisfaction can be measured cross-sectionally and longitudinally to determine whether competitive or

regulatory regimes are producing higher levels of customer satisfaction.

On a related front, the movement toward competition was in great part a search for a way to "de-politicize" price setting and other aspects of the electric business that had become serious bones of contention in the political arena. However, the outcome of the grand experiment is a political question fundamentally in both of the two great North Atlantic federal systems.

10) The Pace of Technological Innovation: Creating the InfoCom Utility

Will competition or more traditional regulation better accommodate development of what might be called the "InfoCom utility"? A key societal goal of the railroad model was extending the benefits of new and wondrous technologies to more and more people.[8] How rapidly will the electric industry adopt new electric technologies in the production, delivery, and consumption phases?[9] Will an InfoCom utility emerge that fully leverages electricity infrastructure and modern communications to manage information within the system and to help customers optimize the value of services and products and to provide telecommunication services to end-use customers or to other telecom providers?

Expect the Unexpected

In the years immediately following the proposal of the "Ten Point Plan" over two decades ago, the lines were drawn between those who advocated a upending of the *status quo* and those who defended the traditional system as the essential condition for continued reliable and affordable service. Few would have suggested the landscape we now behold as the Grand Experiment. One lesson from the past two decades of change in network industries is that no prescription is valid for long and that the human factor refuses to be confined within any model. ■

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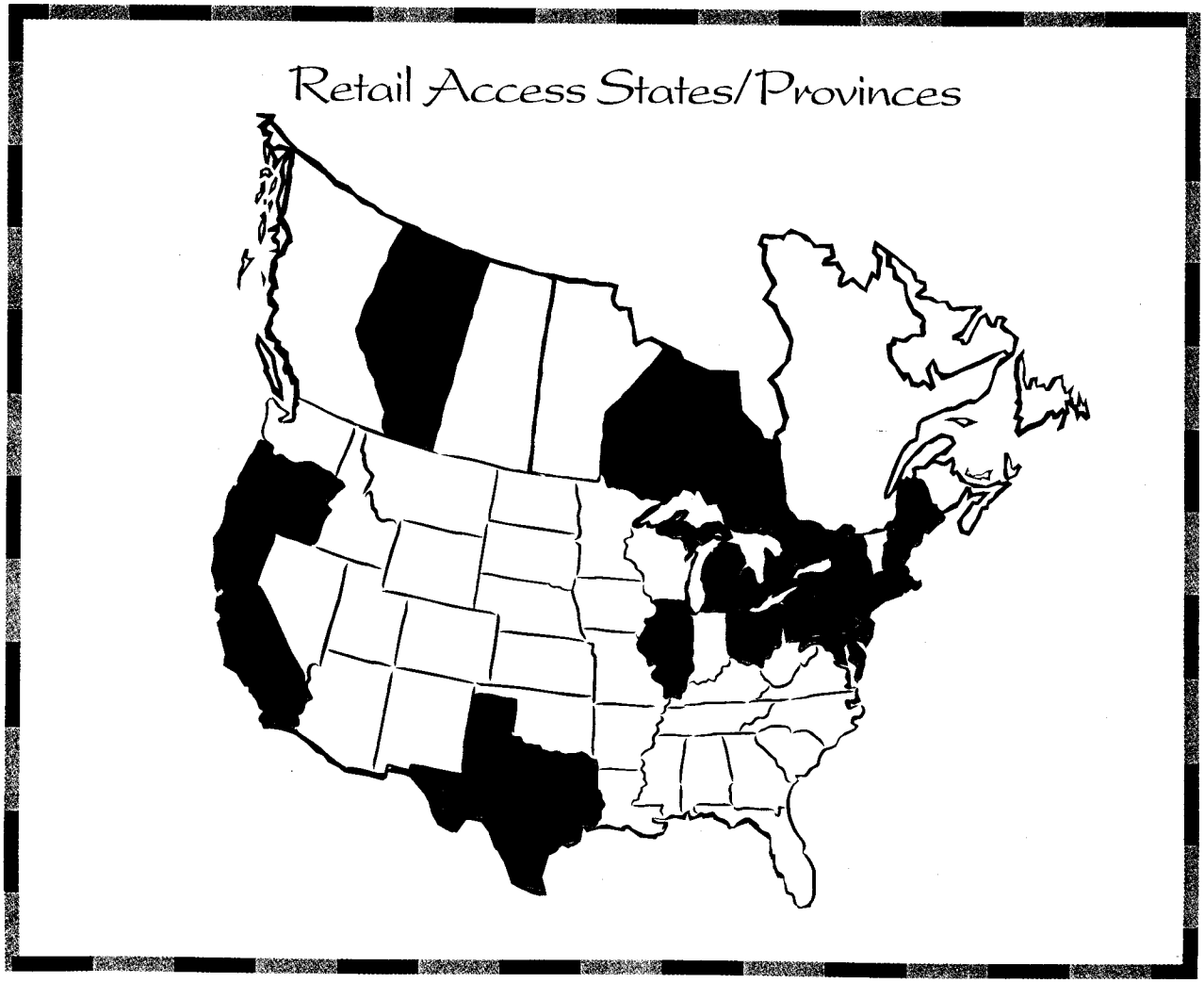

ment Office (IRMO) as senior policy and legal advisor to the ministry of electricity. Barnich served as chairman and commissioner of the Illinois Commerce Commission from October 1989 through November 1993. Contact him at tbarnich@nprg.com. Philip R. O'Connor, Ph.D., is Illinois vice president of Constellation NewEnergy Inc. He served as chairman of the Illinois Commerce Commission from 1983 through 1985. Contact him at philoconnor@earthlink.net. The authors are solely responsible for the views expressed in this article.

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Endnotes

1. For a description of the variations in EU electricity policy directive implementation, consult a scholarly analysis and lament on this point presented by Jean-Michel Glachant and François Lévêque in their September 2005 paper *Electricity Internal Markets in the European Union: What to Do Next?* as part of the SESSA project of the Center for Energy Policy and Research. Glachant and Lévêque identify specific shortcomings in EU member states with respect to implementing electric competition policy directives and offer a set of primary and secondary actions to remedy the situation.
2. Interestingly, while total Canadian electricity exports to the United States have grown by about 12 percent between 1993 and 2004, U.S. electricity exports to Canada have grown by well over 700 percent, meaning that the ratio of Canadian exports to its imports for the United States was about 3:2 in 2004 compared with about 11:1 a decade before. See Table 6.3 U.S. Energy Information Administration's *Electric Power Annual 2004*.
3. These figures are interpolated from Table 6.2 of the EIA's *Electric Annual Report 2004* and may be somewhat understating the role on non-utility generation in 2006.
4. Strong evidence of the demise of the old verities of the industry can be found in the recent survey of North American utility executives by GF Energy. First, the diversity of opinion about the likelihood of various possible developments in the industry during the next several years is quite striking. Deep division can be seen on the role of competition and regulation, issues that would have found near unanimity two decades ago, or would not have been contemplated at all. Second, irrespective of views on retail open access, there is a strong current of opinion that technology and information developments will have a significant impact on customer usage patterns. *GF Energy 2006 Electricity Outlook*, GF Energy LLC, http://www.gfenergy.com/outlook06.html
5. The more significant methodological problem in applying the Ten Tests is not the quantification of the measures but, rather, the classification of the units of analysis into the two categories of old regime and new paradigm.
6. An interesting feature of electric industry development during the past 15 years in the United States has been the dramatic improvement in nuclear power plant availability and capacity factors. This improvement has been coincident with the emergence of wholesale and retail competition as well as with considerable merger activity creating much larger nuclear operation as well as "de-rate basing" of nuclear plants. Yet it cannot be conclusively said that the improvement has been the result of competition.
7. The authors made the argument a decade ago that the application of technology and sound economics could enable the competitive model to advance the cause of extending service and lowering costs for low-income customers. See O'Connor, Philip R.; Jacobson, Erik B., and Barnich, Terrence L. "Regulation or Technology? Low-Income Customers and the Transition to Competition," *Public Utilities Fortnightly*, Nov. 15, 1995.
8. Some competition advocates have maintained that whatever the original objective, traditional regulation eventually was discouraging technological innovation because sunk costs were destiny in cost-based regimes. See, *e.g.*,Alfred E. Kahn, *Letting Go: Deregulating the Process of Deregulation*, Institute of Public Utilities, Michigan State University Press, 1998; RobertW. Crandall, *Competition and Chaos*, Brookings Institution Press, 2005.
9. The Illinois Institute of Technology in Chicago and the Galvin family that built communications powerhouse Motorola Inc., have embarked on a joint project to leverage wireless and other communications technology to create the "perfect" electrical system with far greater reliability and customer control. "Motorola's First Family Now Focused on Redesigning Electrical Distribution," *Daily Herald* (Arlington Heights, Ill.), Aug. 21, 2006.
10. Clark W. Gellings and Kurt E. Yeager, "Transforming the Electric Infrastructure," *Physics Today*, December 2004, at p. 13:"[Information technologies] have transformed every major industry in the Western world except the electric power industry. ... What we do need is to use advanced technology to modernize and enhance the use of the existing asset base." Some utilities in both the United States and Europe have been going down the road to create intelligent electricity networks to, in the words of Spain's Endesa, "achieve maximum quality and efficiency in distribution, predict demand, anticipate instabilities, and increase the flexibility of the electricity distribution operation by incorporating sensors, and real-time communications and systems management." Endesa press release, June 28, 2006.