

Rethinking Regulated Ratemaking: Menu-of-Service Electric Utility Tariffs

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Abstract--Retail electricity consumers are demanding more choice in the reliability, power quality, and efficiency of their energy services. Electric distribution companies provide delivery services for the electricity commodity provided by central power generators. More customer choice in the use of the transmission and distribution system would benefit customers and would increase the application of distributed energy resources, including on-site generation, storage, and metering, monitoring and control devices. Greater choice offered through a retail menu-of-service approach would provide feedback to electric distribution companies. This feedback could affect the planning and design of the electricity network. Reform of the network is needed to remain responsive to changing customer needs and technologies. Greater choice would also set the stage for increased use of competitive markets for retail electric services.

Index Terms-- Distributed control, Finance, Interconnected power systems, Load management, Network operating systems, Network reliability, Power distribution economics, Power distribution planning, Power generation peaking capacity, Power system economics.

I. INTRODUCTION

CENTRAL planning and monopoly operation of electric transmission and distribution suggests a need for a system of economic regulation. As technologies mature, and customer preferences and prices change, economic regulators must react quickly or find that their regulations are barriers to efficiency and progress. The regulation of vertically integrated electric utilities worked reasonably well during a significant portion of the twentieth century, but the traditional assumptions and policies are inconsistent with the emerging market-based, customer-driven electric industry. The manner in which prices for T&D services have been set has had a fundamental impact on T&D architecture. Revenue recovery through administrative pricing affects the way that utilities plan. The ability of retail customers to choose the level of T&D services that they desire would change the motivations of the T&D owners. T&D architecture would be fundamentally different if it responded to market forces and customer preferences rather than traditional “rules of thumb.” Feedback, in the form of price-demand response, would make utilities responsive to

customer needs and market pressures, and would lead to more efficient resource allocation.

II. REGULATORY AND RATEMAKING ISSUES

Federal, state, and local government officials regulate electric utilities. State laws dominate in the USA, with administrative law processes determining a utility’s revenue requirement, allocating the obligations to customer classes, and determining the retail rate design to ensure its collection. In addition, states maintain planning oversight through their review of utility plans and the issuance of certificates of convenience and necessity. Collectively, these planning and ratemaking practices stand as one of the last great impediments to economic efficiency in the economy. A century of experience and volumes of legal precedents have created a self-justifying logic that is entirely consistent with a static system of monopoly regulation, but entirely inconsistent with competitive markets and economic efficiency.

The financial community is hungry to invest in efficient technologies, but cannot manage significant regulatory risks. Small firms cannot afford to participate in regulatory proceedings. There is a huge potential for innovation and new capital investment in energy services that will make the economy less energy intensive and more productive. To achieve the potential, utilities must change the way they plan, invest, and set rates.

The T&D system was conceived as a means of distributing electric power from central power generators to customers served by a monopoly utility. The existing means of paying for it is consistent with monopoly regulation. The T&D system is a physical infrastructure that is increasingly strained to meet the needs of willing sellers and willing buyers of electric power. Reform of the transmission system has been led by the Federal Energy Regulatory Commission with some successes, but with mixed results overall. Reform of distribution system regulation has been nearly nonexistent. Even though the Public Utility Regulatory Policies Act was passed 27 years ago, it was only about seven years ago that serious policy work began on standards for the interconnection of small generating units at the distribution level. Even now, only about half the US states have made significant progress in adopting technical interconnection standards. A market-based approach would respond more rapidly. The physical interconnection issue is only one of the

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most obvious of the reforms necessary.

Parallel to a mindset that keeps small generators off the distribution lines is a way of thinking about the costs of the T&D system. In transportation terms, one might say that the *king's royal highway has been built, and tolls must be levied*. Centuries ago, our transportation system was inefficient and costly because you paid a fee in each village, and the “pike” was then “turned” to let you pass (hence “turnpike”). (Think about “pancake” transmission rates.) For too long, T&D has been a monopoly service with lines built to receive power from central power generators. There has been a mindset that the tax (rate) must be imposed on every customer, without serious regard for degree to which each customer uses the T&D investment. Without feedback on usage from customers (that is, without a price response), there has been little need to design a network of wires and controls that meets the customers' changing needs.

Customers no longer have a universal desire for distant power plants or for the wires that transmit this power. Customers have a few choices today, and in selecting energy services they ought to be charged based on what they want, when they want it, how much they use it, and the quality of service that they receive. Each of these dimensions—what, when, how much, and quality—has a corollary with respect to energy services. For example, do you want wind (green) power or a local fossil unit? When are your demands the greatest? Can you alter the time of use with storage? Are you willing to invest in end-use efficiency to change your usage? Can you withstand an interruption on a portion of your load? Do you require a high quality waveform every minute of every day?

If customers are given choices, then T&D utilities will need to be more responsive to customer demand in planning and designing the system, and in making additional investments to modify it. As T&D utilities become responsive to customers, the need for regulation will be reduced. Cross subsidization will be reduced as costs are unbundled, and customers are given choices and pay according to their usage. Resources that are more mobile will be added, and customers who are more responsive to price may allow system expansion to occur more efficiently. These new assets—at substations, along the network, and on customer premises—may enhance reliability for those who are unwilling to accept something less than a premium level of reliability and quality.

In approaching T&D system planning and ratemaking, there are threshold issues. A rethinking of planning and certification raises the issue of the role of the utility and regulator. A rethinking of T&D ratemaking raises the issue of who should pay. Long before we ask, “Which class of customer should pay?” we ought to ask, “Should users or suppliers pay?” (Under the current system, the cost of T&D service is allocated to retail customers. Perhaps it is valid to view the T&D system as something used by power generators who

seek access to retail customers.) A rethinking of who pays for T&D would alter the dynamics of what is needed, what level of investment ought to be made, who will make the investment, and who will bear the cost of bad investments.

Finally, there is an issue with respect to the level of regulation that is appropriate. Improved pricing would allow price signals and the discipline of markets to control the behavior of all stakeholders, including T&D utilities, the vendors of traditional energy services, and the vendors of distributed energy technologies. Regulators can establish minimum standards of behavior and let the market work out what needs to be offered to retail customers. A light-handed approach to the regulation of distribution utilities seems to work in New Zealand. England has 15 years of experience with distribution company regulation that relies on direct publication of distribution utility performance. There is a call for less regulation, and setting up the market in an efficient manner may make less regulation workable.

III. CONCLUSIONS

Retail electricity consumers are demanding more choice. More choice in the use of the T&D system would benefit customers and provide feedback to electric distribution companies. Feedback on price and usage could affect the planning and design of the electricity network. Greater choice would also set the stage for increased application of competitive markets in the future.

IV. BIOGRAPHY



Nat Treadway graduated from Princeton University, School of Engineering, in 1975, and he received a Masters of Science in agricultural economics from Michigan State University in 1982.

His employment experience includes energy conservation coordinator for a municipality, staff member at the Public Utility Commission of Texas and independent consultant. He has testified in rate cases, power plant certification proceedings, and avoided cost hearings on matters relating to energy efficiency, load management, electric utility resource planning, special contract pricing and competitive issues. He served as a senior policy advisor to the Texas commissioners, prepared final orders of the commission, led efforts to develop oversight of electric utility integrated resource plans, and created the initial regulations for the separation (unbundling) of distribution costs and functions from competitive energy services. As a consulting economist, he has compiled data on electric utility restructuring for the Retail Electricity Deregulation Index (RED Index), argued the case for small generating unit interconnection, and promoted rates and tariffs for distributed energy customers. He is currently a managing partner for the Distributed Energy Financial Group, LLC, a consulting and financial services company created in 2003 to serve the financial, business planning and policy needs of distributed energy vendors and service providers.