

RESTRUCTURING' MEANS CHANGES



AND CHOICES FOR TENNESSEANS



Whether competition will benefit Tennessee depends on the federal government's uncertain future actions regarding TVA

by Daniel Cohen-Vogel

Tennessee's electric industry is unique among the states. Most electricity customers in the United States purchase electricity from integrated utilities, meaning that one entity owns all three stages of production: generation, transmission, and distribution. For the most part, these utilities are investor-owned, are regulated, and their service areas are confined to a fixed portion of the state. The Tennessee Valley Authority (TVA) provides power through an integrated generation and transmission system to 98 percent of all customers in Tennessee as well as to parts of six bordering states. For its distributors—63 municipal systems and 23 rural electric cooperatives in Tennessee—TVA acts as the regulator as well as the wholesaler. The only major exception to TVA's monopoly in Tennessee is the greater Kingsport area, which is served by Kingsport Power, part of the integrated, investor-owned American Electric Power.

Because TVA is a federal government corporation and has a near monopoly on the electricity supply in Tennessee, any answer to whether competition will benefit Tennessee depends on the federal government's uncertain future actions regarding TVA. However, regardless of the balance between federal and state roles in any restructuring effort in Tennessee, Tennesseans will continue to question the potential impacts of such actions. Will prices rise? Will some residents lose access to electricity? Will economic development suffer? What will be the impact on the state's already suffering air quality? Could Tennessee face the blackouts and price spikes that have recently plagued California?

While restructuring may occur in Tennessee, its form and its consequences are by no means

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inevitable. To be sure, decisions in Congress and in the rest of the country will limit the paths Tennessee may take, yet those remaining paths represent choices that residents and policymakers will make to help answer these questions.

“How will restructuring affect my electricity bill?”

Tennesseans surveying the U.S. electricity landscape are often wary of suggested changes to TVA or to the overall structure of the electric power industry in their state. Most experts concur that lifting certain regulatory restraints and barriers to trade will result in some amount of price equalization regionally or nationally, but there is disagreement concerning how much equalization will occur, whether and how much prices will decline overall, and to what degree there will be differences in the direction and magnitude of price equalization among customer classes.

The following are many of the factors that contribute to price differences, cause Tennessee’s prices to be relatively low, and affect prices in a competitive market.

- *Production costs:* Fuel, technology, and labor costs account for the biggest share of prices. TVA’s power sources are about 61 percent coal, 12 percent hydroelectric, and 27 percent nuclear. This is significantly greater, on average, than the nuclear or hydroelectric reliance of the rest of the United States, and these two sources generally have the lowest marginal production costs. Coal-burning power plants also have relatively low production costs, particularly some of TVA’s older plants that have historically been “grandfathered” out of certain regulatory requirements. If TVA power sources generate power for consumers outside of the region in a competitive market, that means Tennessee’s electricity needs may be at least partly served by other generators. Differences in electricity prices attributable to production costs will likely dissipate, causing average prices in Tennessee to rise.
- *Residential subsidy:* Of all the states, Tennessee has the smallest price gaps between industrial or commercial and residential customers. Because commercial and industrial customers purchase greater quantities of electricity, they generally receive lower prices. TVA’s mission as defined in the TVA Act favors residential and rural electricity consumers. The small rate gap between residential and other classes (commercial and industrial) is an indirect subsidy resulting from TVA’s reservation of its cheapest (hydroelectric) power for residential customers, based on interpretation of the TVA Act.⁴ Such subsidization may not exist in a competitive market, and its absence would cause higher residential prices and lower industrial and commercial prices.
- *Transmission and distribution costs:* In a

Because residential electricity prices in Tennessee are lower than in most other states, restructuring is expected to result in price increases, all else being equal.

Because residential electricity prices in Tennessee are lower than in most other states (see table below), restructuring is expected to result in price increases, *all else being equal*. Similarly, large commercial and industrial customers are expected to benefit disproportionately because of their buying power and their current prices compared to national averages. However, all else is not equal. Rate differences arise from many causes, and total equalization of rates among customer classes and regions is unlikely to happen for a number of reasons.

Tennessee and U.S. Average Revenue² (Price) by Customer Class, 1999

Customer Class	Tennessee, cents per kWh	United States, cents per kWh	Tennessee’s Rank ³
All classes, average	5.63	6.66	37
Residential	6.34	8.16	45
Industrial	4.19	4.43	30
Commercial	6.29	7.26	32

Source: U.S. Department of Energy, Energy Information Administration, “Annual Electric Utility Report,” Form EIA-861.

competitive market, the differences in costs of sending power to populations of varying density are expected to persist as a factor driving regional price differences. Areas with flat terrain and concentrated populations are less expensive to serve. The number and capacity of regional transmission system interconnections also affect the ease of transmission from one region to another, thereby physically constraining the smooth functioning of interregional electricity transfers.

- **Taxes:** Taxes contribute substantially to the prices consumers pay for electricity in some states. However, differences in taxes may not continue to be a factor in regional price variations in a competitive market. Taxes that are applied to consumption, such as a sales tax, would remain in place in a state regardless of the source of the electricity. However, taxes on the producers of electricity, such as corporate income taxes or environmental taxes, would contribute less to regional price variations. The trend for many states further along in restructuring efforts is to replace production taxes with consumption taxes.
- **Regulations:** Differences in regulatory environments lead to differences in the cost of doing business. California’s capacity shortage, for example, has been exacerbated by environmental regulations and new facility permitting processes that extend the length of time to build a new power plant. State regulatory agencies also have traditionally approved utilities’ rates, including a maximum allowable return above costs. In a competitive market, regulatory differences will largely cease to contribute to price differences among states. Power from highly regulated states will not necessarily be sold in those states, and traditional rate regulation will cease.⁵
- **Other state and federal policies:** Public policies that affect the cost of electricity include universal service requirements, environmental restrictions, and constraints on the allocation of certain costs and benefits. For example, residential customers or low-income customers may receive tax breaks or subsidies. Congress may attempt to “level the playing field” between public and private utilities’ financing or other differences, causing price effects beyond the control of the state. Some such changes could have significant implications for Tennessee, where TVA generates nearly all power, and all distributors are either rural cooperatives or public (municipal) entities.
- **Technological changes:** Consumers may realize benefits from innovations that promote greater efficiency and remove certain market barriers, such as Internet trading, data man-

agement, real-time pricing, spinning reserves,⁶ and energy storage plants (developed recently by TVA). Prices for all regions and consumer classes may decline as a result of such innovations. Moreover, advances such as fuel cells may substitute for electric power altogether, making a deregulated electricity market simply an interim solution until power plants and transmission lines are obsolete.

The rate gap between residential and other classes, a subsidy resulting from TVA’s reservation of its cheapest (hydroelectric) power for residential customers, may not exist in a competitive market.

- **Quality of service:** The quality and quantity of both electric and nonelectric services may improve with retail competition. Energy services (e.g., metering and billing) and complementary services (e.g., telecommunications) may expand in a competitive industry.
- **Management efficiency:** Competition is expected to induce more efficient management throughout the industry, equalizing operation efficiency differences.
- **Electricity substitutes:** Natural gas consumption per capita in Tennessee is low, and the potential market for natural gas may serve as a market-driven price ceiling should electricity prices rise in Tennessee.
- **Aggregation and current consumption:** Bringing together a number of customers to act as a purchasing block is referred to as *aggregating* customers. Because retail competition means that consumers will not necessarily purchase electricity from their local distributor, aggregation may provide significant opportunities for more economical buying arrangements. The degree to which all classes of customers are able to take advantage of aggregation will affect the rates they pay. Tennessee has the highest per capita electricity use in the country. Thus, for example, one average Tennessee household will purchase more than twice the electricity as an average household in New Jersey.
- **Financial efficiency:** The cost of debt is passed from utilities to customers. TVA’s customers experienced a price hike in the late 1990s to help pay down the agency’s large debt. However, that debt remains large, and Tennessee customers will see further price increases if TVA passes on the costs of

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nuclear and other investments as competition approaches.

- *Stranded costs:* The legal or regulatory definition of stranded costs—nonproductive or non-competitive investments, such as inoperative and incomplete nuclear facilities—and the allowable methods for recovering those costs will have significant impacts on consumers' bills. Whether Congress will leave these stranded cost decisions to the states TVA serves is not certain, but clearly it is in the interest of TVA customers to have the federal government assume responsibility for some, if not all, of the agency's failed investments.

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Avoiding the California Debacle

The recent energy crisis in California has focused considerable negative attention on the prospects for nationwide electric industry restructuring. Policymakers across the country are wary of jumping into the restructuring fray and risking the severe consequences experienced in California. However, other states that have implemented or are moving toward retail competition are not experiencing shortages or price spikes. In contrast to the California experience, other states, such as Pennsylvania and Texas, claim some success with their restructuring moves. According to the U.S. Department of Energy, as of August 2001, 23 states plus the District of Columbia had enacted restructuring legislation, one state had issued comprehensive restructuring regulatory orders, and most of the remaining states were pursuing or had completed legislative or regulatory study of the issue.

California's situation is instructive to Tennessee and other states in that it highlights pitfalls to avoid. Study of the California situation reveals some conditions that may not apply elsewhere: (a) capacity shortage, caused by faster than expected growth in California and neighboring states as well as uncertain and restrictive regulatory environments; (b) statutory price freeze, which places the entire risk of market fluctuations on retailers; (c) contractual constraints, the bidding process, and other market barriers imposed by regulation or legislation. In addition—though not directly related to restructuring—natural gas prices, weather, and envi-

ronmental regulations raise electricity costs and further exacerbate the situation.

If Tennessee and federal policymakers decide to bring competition to Tennessee in the coming decade, the conditions from which a competitive market will be built will differ considerably from those of California. To be sure, as in the California case, certain conditions are beyond the control of regulators and legislators. However, decisions regarding transmission governance, taxation, stranded costs, and a host of other issues will be within policymakers' control.

Some Decisions for Policymakers

The set of issues state legislators and regulators may be called to address affect a broad range of interests and policy areas. Likely decisions related to industry restructuring include:

- *Market Organization:* The California situation highlights the importance of how the new market is structured. Who will invest in and maintain the transmission system, balance supply and demand, and maintain reserve power sources for shortage periods? Will power be sold through auction, as it is in California; if so, how will the auction be structured? Will bilateral contracts—direct sales that circumvent the auction process—be permitted? Will transmission and sales take place through one central operator? Will generation and transmission be unbundled (i.e., separated); if so, to what degree should this separation be mandated?
- *Taxes:* Restructuring may affect local and state tax revenues in a number of ways. Policymakers will have to determine how to adjust the tax base and the specific taxes levied. Will the state continue to exempt residential energy from taxation? How should *nexus* (physical presence in the state) be defined for out-of-state firms doing business in Tennessee? With changes in the way electricity is bought and sold, there are likely to be changes in prices, use patterns, property valuation, and the mix of public and private ownership. How should the tax structure adjust to these changes? Will the distribution of state and local taxes from the industry change, and how will that affect government services?
- *Environmental Quality:* Air quality is already a concern in Tennessee, where the impacts of coal-burning power plants, motor vehicles, and other polluters are substantial. Smog and acid rain are problems in the Great Smoky Mountains National Park, and a number of metropolitan area counties in Tennessee have been or are in danger of being

designated non-attainment areas by the EPA. A competitive electric industry means that Tennessee and southeast regional power producers may sell to non-Tennessee consumers. As a result, policies that target consumers to reduce pollution become ineffective, reducing the tools in the state's environmental policy toolbox. Moreover, relatively dirty coal-burning power plants will be motivated by profits to produce more power for the national market and may produce more pollution locally as a result. One other environmental concern is the proliferation of new power plants, mostly gas-powered, that has begun in recent years in response to expectations of an expanding electricity market. These new plants use dwindling water resources and contribute to air pollution. The governor's recent moratorium on new power plant permits is a response to these adverse environmental impacts.

- **Universal Service:** Will competition exclude some people from electricity service if it is unprofitable to serve them or if prices rise to prohibitive levels? Within the current distribution structure, which is expected to persist even in a competitive retail market, customers are not likely to be excluded. Moreover, to allay such fears, the state may require sellers or distributors to provide service to any willing customers. If there is concern that high prices will exclude some from the market, then targeted subsidies, price caps, or incentives to aggregate customers are possible solutions. However, these are programs that may require financing through taxes on all citizens or on other users.
- **Economic Development:** Electricity prices affect production costs and therefore profits. While not the most important factor in business location decisions, electricity prices may influence those decisions. Some observers have suggested that price changes will mean changes in the state's ability to attract new investment. While TVA has helped draw new investment to Tennessee directly through its recruitment activities and indirectly through its low electricity rates, private power companies also engage in economic and community development activities. In a competitive electricity market, purchasers of power will not be limited to generators within any particular service area, and the role of electricity prices in economic development may decline significantly as a result.

Conclusion

Although Tennessee has been insulated from the restructuring activities occurring in much of

If Tennessee power producers could sell to out-of-state consumers, policies targeting consumers to reduce pollution would become ineffective.

the country, changes are on the horizon for the state. Depending on other state and federal restructuring efforts, it may be beneficial, even compulsory, for Tennessee to participate in this process. Nearly all Tennessee households and businesses currently purchase their electricity from TVA. The effects of restructuring, particularly if it includes the privatization or dismantling of TVA, will be profoundly felt in Tennessee. The impact of this process on the state will hinge on Tennessee legislators, regulators, and customers' choices. The state's policymakers will need to prepare themselves and position the state to choose effectively. ■

Daniel R. Cohen-Vogel is staff economist to the Comptroller of the Treasury for the State of Tennessee. He staffs the Tennessee General Assembly's Joint Study Committee on Electric Deregulation and co-authored a recent report to the committee entitled "The Potential Impacts of Electric Industry Restructuring in Tennessee."

Notes

1. This article uses the term "restructuring" rather than "deregulation," since the changes described signify a different set of regulations and market relationships but not the removal of all regulation from the industry. Because of continuing government controls on the market, some observers joke that "deregulation" is really "re-regulation."

2. Because price structures vary considerably among utilities, average revenue per kilowatt-hour (kWh) more accurately reflects what people pay for electricity. However, this article may use the term "price" interchangeably with "average revenue."

3. Ranking is out of 51 (50 states plus the District of Columbia).

4. The Tennessee Valley Authority Act, Section 11 (*16 USC Sec. 831j*), states the policy "... that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such a manner as to encourage increased domestic and rural use of electricity." TVA has interpreted Section 11 to mean reserving hydroelectric power for residential customers.

5. A caveat to this statement is that some states still maintain price caps after "deregulation."

6. A spinning reserve is an ancillary service in which the system operator or other entity maintains reserve generating capacity running at a zero load and synchronized to the electric system.