ENERGY & ENVIRONMENT

THE NEED FOR ELECTRICITY RETAIL MARKET REFORMS

An innovative 21st century retail electric power market is within reach, but won't emerge until we ditch 20th century regulations.

BY MICHAEL GIBERSON AND LYNNE KIESLING

School budgets always seem tight, so you might be surprised that state regulators would seriously consider a proposal that would *increase* school operating costs by millions of dollars as part of an effort to boost monopoly electric utility profits. Yet Michigan legislators came close to adopting such a proposal in 2014 when they considered ending the state's customer choice option for retail electricity consumers.

School administrators working with the nonprofit Michigan Schools Energy Cooperative (MISEC) told legislators that retail energy choice helped them save almost $15 million in 2013. MISEC has helped Michigan schools save over $120 million since it was formed in 2000, the year the state first allowed customer choice. Eliminating customer choice meant schools would have to cut services elsewhere.

Ever since Michigan allowed retail customer choice for electric power, the state's regulated electric utilities have pushed to return to the comforts of being regulated monopolies. In 2008 the utilities convinced regulators to cap the popular option at just 10% of the market. Average retail power prices were just below the national average when customer choice began in the state, and were still below the national average in 2008. Now, however, Michigan prices are above the national average and the waiting list of retail customers wanting to choose their own electric suppliers has grown into the tens of thousands. Those whom regulation excludes from the market are clamoring for choice.

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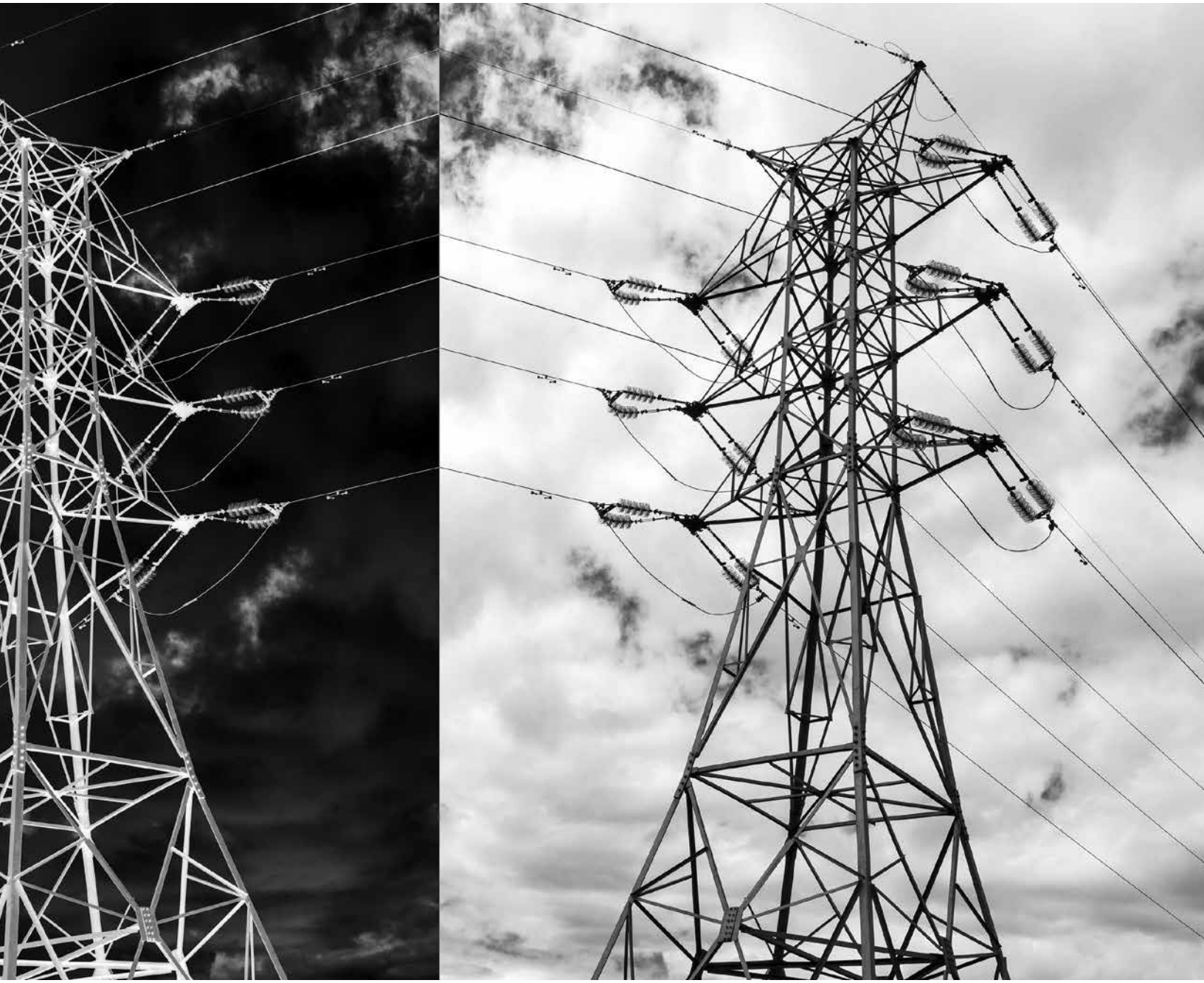
WHATEVER HAPPENED TO DEREGULATION?

The Michigan experience exemplifies the last two decades' half-hearted push into customer choice reforms for electric power. The hope of reformers in Michigan and elsewhere was to bring to electric power the same burst of innovation, better prices, and customer-oriented growth that had resulted from the deregulation of airlines, trucking, financial services, and other industries in the late 1970s and 1980s. There is some evidence that it is working, too, if you look in the right places—Michigan schools, for example.

The customer choice movement was strongest in states with especially high power prices in the 1990s, like California, New



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York, and Massachusetts. A few moderate-priced states with well-organized industrial energy consumers, like Michigan, Ohio, and Texas, also pursued reform. If regulated monopoly was the problem, then reform meant allowing competition and giving customers the ability and responsibility to choose their own electricity supplier. By early 2001, about 20 states had begun reforms and millions of electric power consumers gained at least some freedom to choose their retail supplier.

Yet when California's newly restructured system fell apart in 2000–2001, the push for deregulation stopped faster than it started. (See "Special Report: The California Crisis," Fall 2001.) States that had not initiated reforms simply abandoned deregulatory proposals. Others froze reforms, limiting competition to a fraction of mostly industrial and commercial customers. Only 15 states continued to push for competition, more cautiously than before.

The passage of time has given us perspective on the California market meltdown, and we now have experience with retail competition from the states that stayed the course. The industry has also changed much in 20 years, with new and better technologies for power generation, communication, and coordination now available. We have a deeper understanding of the resource

opportunities and environmental tasks we face, and reasons to appreciate both the role of policymakers and the wisdom behind limits placed on their reach.

It is time to take a fresh look at the case for retail electric power competition. Vast advancements in digital technology provide the basis for dramatic change in the electric power industry. For these developments to emerge, however, the distribution grid must transition from its one-directional, utility-to-consumer flow to support multi-directional flow. Homes, small businesses, office parks, and other utility customers are already shifting from pure consumers to being hosts for distributed energy resources on a small scale, with technologies like microgrids, rooftop solar, and electric vehicles. The potential for distributed generation and greater customer interaction is much larger than 20 years ago.

The technology for this transformation already exists. Computers and telecommunication technology are merging with distributed energy systems. At the leading edge, programmable thermostats have given way to smart home energy management systems that enable consumers to automate changes in their appliance and device settings. Great possibilities arise from the "internet of things," a vision of device-to-device coordination working automatically to achieve consumer goals at low cost. This vision enables smarter energy use that can produce both environmental benefits and consumer savings.

THE CHOICE BETWEEN MONOPOLY AND COMPETITION

The historical logic of utility regulation was as follows: the electric utility industry offered significant economies of scale—the larger the utility, the lower the average cost of producing power. If competition were to be permitted, the largest of the competitors could undercut its competitors and become a monopolist, and would then be in a position to raise prices and obtain excess profits. By granting a state-protected monopoly territory, the state enabled the utility to achieve economies of scale, but in exchange the state asserted authority to regulate utility rates to protect consumers.

Utility regulation also had an economy-of-scope rationale. The need for continuous close matching of the quantity of electricity produced and consumed on the grid provided significant economic and reliability benefits from vertical integration across the retail, "wires," and generation sectors of the industry. Transaction costs would have overwhelmed any early attempt to develop a large-scale local distribution system involving multiple generating companies and many competitive power retailers on an interconnected grid.

Technical advance has undermined both the economies-of-scale and economies-of-scope rationales for monopoly in electricity. For many years, building larger generating units and larger distribution networks lowered average costs. But beginning in the 1970s the trend toward lower average costs from bigger and bigger utilities came to an end. Smaller generation units were developed that were as cheap or cheaper when matched to the right location, and the recent advances in natural gas drilling that have lowered natural gas prices have amplified that trend. Advances in digital technologies have significantly reduced the transaction costs of continuous coordination among many generating firms.

Perhaps only the power delivery system—the distribution and transmission grid—still shows natural monopoly characteristics. It is no longer necessary for all power production and delivery assets to be owned and managed by a single company. Yet electricity distribution utilities are still substantially subject to monopoly-based regulation.

The internet, with all of its dynamic possibilities, was in large part made possible because telecommunication companies were freed from such monopoly-based regulation. Critical to the internet's dynamism is its openness to experimentation and learning. The internet allows permissionless innovation: within very broad technical and contractual limits, just about anyone can try just about anything.

Economic regulation, however, is fundamentally a permission-based system. Because any new development or change in regulated service requires approval from the utility commission, regulation tends to slow or stifle innovation. Legal entry barriers, bureaucratic procedures for cost recovery, and the risk aversion of both regulator and regulated, all undermine processes that enable innovation. Perhaps ironically, while the most dynamic sectors of the economy are powered electrically, the electric power industry remains largely stuck with 20th century ways of doing business. These old ways discourage innovations that could help the industry better meet the needs of 21st century electric power customers.

The public policy choice to grant monopolies to vertically integrated electric utilities always faced tradeoffs between the innovation and value that would have resulted from competition and the lower costs and more reliable supplies from a regulated monopolist. For many years, both consumers and regulated monopolies seemed better off from the system. This conclusion is no longer true. The costs of blocking competition are growing larger and the benefits smaller. The reasons to prevent customers from picking their own suppliers have faded.

What next? Delivery of electric power is likely to remain mostly a monopoly for the foreseeable future. Allowing competition to grow elsewhere requires isolating the regulated monopoly from competitive sectors. The first step, then, is to quarantine the monopoly. Second, the regulated distribution monopoly must be organized to support transactions among many suppliers and many consumers. Third, the role of utility regulators must shift from market overseer to something more akin to referee.

QUARANTINE THE MONOPOLY

What of the 15 years or so of experience with retail choice in the states that stuck with reforms after the California market

disaster? The results disappoint some market advocates. While retail competition for industrial and large commercial customers is strong, at the residential level markets remain weak in most of the 15 states that allow retail choice. Only in Texas has retail rivalry been robust for residential consumers. While the reasons for weak competition are debated by industry insiders, the Texas exception is telling. Texas, much more clearly than in any other state, has "quarantined the monopoly."

The phrase "quarantine the monopoly" was devised by William Baxter, an assistant attorney general for the U.S. Department of Justice and the primary architect of the 1982 settlement of the federal government's antitrust case against the AT&T monopoly. One of Baxter's principal concerns about AT&T was that the company would have incentives and opportunity to extend its monopoly into related markets to the detriment of competition.

Most restructured states have failed to effectively quarantine the monopoly in electricity in large part because the incumbent monopolist's role as a default provider created a cost of entry that deterred competitors.

In response, he proposed limiting the harm to competition in related markets by isolating the regulated monopoly as much as possible from these markets. This policy of quarantining the monopoly has become known as "Baxter's Law" (and also as the Bell Doctrine).

Texas very clearly quarantined the "wires" monopoly when it restructured its retail power market. Over most of the state, the large, vertically integrated utilities were spun off into separate energy retailers, generation resources, and wires companies. Only the wires companies retained status as regulated monopolies. Texas also chose not to have incumbent default service, which other restructured states retained and which keeps the incumbent in the retail market, even if the generation cost is a pass-through.

With these changes, competition has emerged quite robustly in Texas. Most residential customers in the competitive markets in Texas can choose from over 40 different potential retail energy providers and have over 200 different products to choose from. Over 90% of customers have switched providers at least once since competition began. Consumer products offered include both long-term and short-term fixed rates as well as variable rates, renewable content varies from a few percent to 100%, and consumers with solar panels on their property can sign up for "net metering"–style offers from competitive retail suppliers. The Public Utility Commission of Texas reports electric rates in areas open for retail competition have fallen by about 30–40% compared to the regulated price that prevailed prior to opening the market.

Most restructured states have failed to effectively quarantine the monopoly in electricity in large part because the incumbent monopolist's role as a default provider created a cost of entry that deterred competitors. In Michigan, some customers jumped at the chance to dump the former monopoly provider, but regulated "default service" rates offered by the incumbent utility made it difficult for competitive providers to gain much of a foothold.

Ohio provided for retail competition in 2001, requiring investor-owned utilities to unbundle their services and charges for generation, transmission, and distribution; customers were allowed to choose their own retail supplier. But unbundling services into affiliated companies does not provide the needed quarantine around the monopoly, and competition in Ohio has suffered because of it. After a very slow start, just over half of Ohio residential customers have switched from the utility-offered default service, but most switching has been through customer aggregation programs run by local governments rather than competitive suppliers. Municipal power purchases on behalf of end customers is a far cry from the dynamic retail marketplace needed to promote customer-serving innovations.

The results in other states vary, but a survey of ongoing state legislative and regulatory efforts suggests unhappiness with the current half-way reforms now more than 15 years old. New York, while engaged in a multi-year regulatory push to re-imagine the future of competitive retail power in the state, has simultaneously been imposing tighter, more cumbersome controls on existing competitive retail suppliers. Illinois, too, has been talking about grander visions for a dynamic future, but retains policies like incumbent default service that stifle competitive entry. Connecticut offers customer choice, but it recently banned competitive suppliers from offering contracts with market-based variable pricing.

As Baxter feared with the AT&T monopoly, states that left regulated electric monopolies in the retail supply business have seen these monopolies grow at the expense of competition. Quarantining the monopoly appears to be the single most effective approach to bringing about robust retail competition. It may be the *only* effective approach.

BUILD PLATFORM MARKETS

Once the delivery system monopoly has been quarantined from generation and retailer interests, two policy issues remain: what rules should govern regulated delivery service, and what rates should apply. The delivery company will remain a local

monopoly, and therefore its terms of service and rates will continue to be regulated by the state government. To support the growth of competition and innovation, the rules and rates should be as neutral as reasonably possible with respect to producer and consumer technologies, retailer business models, and customer classes.

Environmental policy goals and other social policy goals are best dealt with directly rather than trying to engineer distribution rules to achieve policy outcomes. The regulated distribution system rules should not operate to discriminate in favor or against, say, renewable power technologies or customers with self-generation capability. Interconnection standards should be developed and harmonized across distribution utilities within a state and across states. Widespread standardization of technical requirements will minimize regulatory barriers to entry for distributed energy resources and other customer systems such as electric vehicles or residential batteries. The primary policy goal in developing such standards should be to support permissionless innovation while ensuring that customer equipment does not hamper system performance.

The primary goal in developing interconnection standards should be to support permissionless innovation while ensuring that customer equipment does not hamper system performance.

The wires company is the physical platform for delivering power to and from retail customers. This physical platform should be complemented with a market platform to help buyers and sellers on the grid come together in ways that coordinate the use of the power delivery system. This local delivery system integrated with an energy market is best conceived as a platform market.

One proposal for platform market organization is the Independent Distribution System Operator (IDSO) model: an independent entity charged with planning functions and operational control of the distribution grid that is separated from ownership of the distribution system assets. The proposal resembles the integrated wholesale markets and transmission system operations of regional transmission organizations such as the New York Independent System Operator (ISO), PJM, and the Midcontinent ISO. IDSOs are recommended for distribution utilities with a high degree of distributed energy resource penetration as better able to offer non-discriminatory access and transparency while reducing market power concerns.

The IDSO split of asset ownership and control is especially critical if the distribution utility has not been well quarantined from generation and retailing interests. The critical independence is from economic interests in specific generation assets or retailer services. The rules governing the platform market and use of the grid will be important to fostering innovation.

As an illustration of this point, consider the potential of smart meters and the data they make available. Utilities frequently wish to monopolize control over customer-related data, but consumers can benefit from (carefully managed) sharing of data with energy retailers and other service providers. Smart meters can be important innovation enablers that lower costs and aid in achieving customer goals. Both the value of electrical energy to consumers and the cost to suppliers can vary dramatically over the course of a day. Smart meters can track how much electricity is flowing across the instrument throughout the day and share that information with retail suppliers and customer energy management systems, enabling more sophisticated market and energy consumption strategies. The old analog meters, read manually once a month, would block many potentially valuable business models. A smart-metered distribution utility that withholds detailed data even from the consumer can just as easily block potentially valuable services.

While most distribution utility costs reflect capital investments, reliable operation of the distribution system requires energy consumption and may involve some transactions between the distribution utility and energy suppliers (or flexible consumers). The IDSO model readily lends itself to transparent, competitive procurement processes. To the extent the distribution system does engage in the procurement of services from energy market participants, such services must be obtained through a transparent, competitive process so as to avoid creation of any conflicts of interest. The distribution platform utility should not itself be a market participant.

DISTRIBUTION UTILITY RATES

The clash of public goals can lead to politicized utility rate cases. Efficiency advocates, renewable energy supporters, and other environmental interests join industrial and commercial consumers and state consumer advocates to lobby public utility commissions into tilting the rate design one way or another. "Not-In-My-Back-Yard" activists show up to protest planned projects. Utilities want to boost their rates of return. Sometimes, regulatory decisions spill over into court cases. The consequences can be large enough to justify these efforts, but the product is not necessarily reliable power at the most reasonable cost.

Policies governing rate cases must shift to support retail competition. There are two parts to this issue: first, how costs of the regulated "wires" utility and related wholesale costs are recovered

from retail power suppliers; and second, how retail power suppliers recover their expenses from end-use customers. The better the rules governing regulated utility rates, the more dynamic the retail energy market will be.

Quarantining the monopoly dramatically shrinks the rate case challenge because distribution system expenses are only one-quarter to one-third of the typical electric bill, but the remaining monopoly will still have regulated rates. Such rates should be designed to recover revenue requirements while remaining as neutral as possible toward the diverse business plans of grid users.

Decoupling the distribution utility's revenue recovery from energy sales is one step toward neutrality. Decoupling provides for periodic rate adjustments to ensure the utility recovers its revenue requirement, neither more nor less. Energy efficiency advocates promote decoupling as a way to remove a bias toward energy sales created by traditional rate designs. From the point of view of supporting competition, the value of decoupling is a way of further quarantining the monopoly. If increased throughput boosts a utility's rate of return, then the utility's interests will be biased toward some customer plans and against others. Decoupling enhances the quarantine by reducing that bias.

In addition to paying for use of the regulated grid facilities, retail power suppliers must acquire and pay for balancing energy and other distribution grid support services through the IDSO's platform market. Efficiency will be enhanced by pricing that balances energy and grid services in ways that reflect real-time conditions on the grid. The best such pricing method is distributed locational marginal pricing (DLMP). While DLMP introduces some complexity to the market, it is far superior to simpler alternatives.

To further support competition, the regulated rates and platform market expenses should be recovered from retail power suppliers rather than directly from end-use consumers. The retailer may simply pass through the utility charge as a few lines on its bill or it may bundle in the charge in some manner. Innovative approaches to consumer rates will be enhanced if the manner in which retailers pass through distribution charges is not dictated by regulators.

Individual consumers need not be exposed to continuously variable, sometimes unpredictable market prices in order to achieve economic efficiency. So long as competitive retail suppliers must cover the costs of grid-usage by their customers, retail suppliers will have the incentive to offer contracts that work to encourage efficient use of the grid. Of course, automation via transactive technologies makes dynamic prices easier for customers to manage as well.

Advanced technologies such as digital smart meters enable rate designs that send more accurate price signals for both energy use and distribution system use. Instead of the still-common bundled flat rate, competitive retail suppliers could offer customers time-of-day sensitive rates, market-price rates, and other dynamic rate designs. Some competitive retail suppliers in Texas have offered customers "free nights and weekends," policies reminiscent of early cell phone rates. Dynamic energy pricing can allow customers to lower their bills by shifting their consumption (e.g., running the dishwasher) from times of day when the grid is at its peak use and costs are high. When customers are encouraged to shift consumption away from peak, overall system efficiencies are improved, which lowers prices for even those consumers who subscribe to flat-rate services.

Automation and digital communications technology reduce transaction costs and make possible more granular, time-specific "wires" charges reflecting real-time costs of system resource use. Such an approach can promote overall system efficiencies and reduce cost-shifting among customers better than increasing fixed-cost allocations or raising demand charges—regulatory tools sometimes employed in response to growing levels of distributed energy resources.

THE ROLE OF THE REGULATOR

The role of the regulator will necessarily change. The regulator will remain engaged in cost-of-service regulation for the distribution system and therefore retain oversight over capital spending and service offerings. Standard cost-of-service rate regulation provides for a reasonable rate of return on capital investment, but it simply passes operating expenses on to customers without offering the utility other profit opportunities. As a result, regulated utilities can be biased toward "asset heavy" solutions to potential system concerns. The potential inefficiency is reduced when the regulated monopoly is limited to the wires-based portion of the system, but it remains a concern. Regulatory oversight of capital investment by the utility continues to be an important task.

However, regulator responsibility with respect to other expenses will shift toward ensuring a smoothly operating, competitive market. Most significantly, regulators will oversee the rules of the platform markets. This aspect of the regulatory mission should be guided by three interrelated principles: innovation, competition, and dynamism.

Many state regulators have found it valuable to establish online information clearinghouses for competitive retail offerings like powertochoose.org in Texas and papowerswitch.com in Pennsylvania. Centralizing and standardizing the presentation of consumer information makes it easier for customers to shop.

Such systems are not without controversy. Some competitive retail suppliers in Texas have carefully designed rate offerings to appear first in most search results, even though few customers will achieve an average rate as low as advertised. The standardization of information presented on state websites may overly focus consumer attention on price or customer ratings and inadvertently impede the ability of competitive retail suppliers to innovate on other product margins. Nonetheless, information clearinghouses appear to encourage competition.

THE RELIABILITY CHALLENGE

Utilities have pushed back against unbundling of vertically integrated companies by raising reliability issues. Reliability concerns were frequently front-and-center when retail restructuring debates began two decades ago. Similarly, with the debate over implementation of the Public Utility Regulatory Policies Act a decade and a half earlier, reliability concerns were frequently cited in defense of the established way of doing things. With each step toward competition it has become clear that reliability can be preserved on the system outside of vertically integrated monopoly control.

With the right rules governing retail markets, price signals will help coordinate customer actions and system needs. Operators should find reliability easier to manage.

Reliability remains a priority for the distribution company and for the regulator. Many reliability practices would remain the same as today, from proactive tree-trimming to participation in the electric utility industry's mutual assistance network for post-storm service restoration.

However, the information and communications technologies constituting the smart grid open up exciting possibilities. Smart grid technologies and their transactive nature mean that reliability need not be a "one size fits all" kind of service. A home energy management system could selectively turn off power to certain rooms or appliances during grid emergencies or during times of high prices, with no effort from or disruption of the homeowner. Smart grid technologies make it feasible for a retailer to offer contracts that interact with the consumer's energy management system. Rather than the coarse tools of brownouts or rolling blackouts in emergency conditions, a smoothly managed curtailment of low-value power consumption would be the first response. With the right rules governing retail markets, price signals will help coordinate customer actions and system needs; operators should find reliability easier to manage.

CONCLUSION

Can it work? Yes. While no one-size set of policies will fit everywhere, several states have shown that greater consumer choice in electric power works.

States including Pennsylvania, Maryland, and Illinois are taking further steps toward empowering consumers. In Texas, most consumers can choose from among hundreds of different power contracts featuring a range of environmental and other attributes. Consumers with residential solar can sign up for a net metering contract through a competitive retail power supplier—no contentious state policy battle necessary.

The wires remain regulated by the state utility commission, as do a number of other features of the electric industry, but within the bounds of the rules consumers find a wide range of choices. Among the innovations around the distribution edge are product offerings that bundle in smart home thermostats or other home energy management options with electric power service.

Current business models and regulatory practices governing electric utilities discourage innovation and make it more difficult for energy resources to flow to consumers in an effective, efficient, value-maximizing manner. But innovation is happening around the edges of the distribution utility, and pressure is building for a new wave of regulatory reforms.

Will such reforms boost consumer choice or lead to a more politicized electric industry? There is an opportunity to cut back monopoly power, promote greater customer choice and customer responsibility for energy production and use, and let consumers get more of what they want from the electric power industry. Building an open, competitive distribution grid will do the most to broaden the opportunities for development of an innovative, dynamic, consumer-focused electric power industry. Supporters of economic freedom should engage this reform effort. *R*

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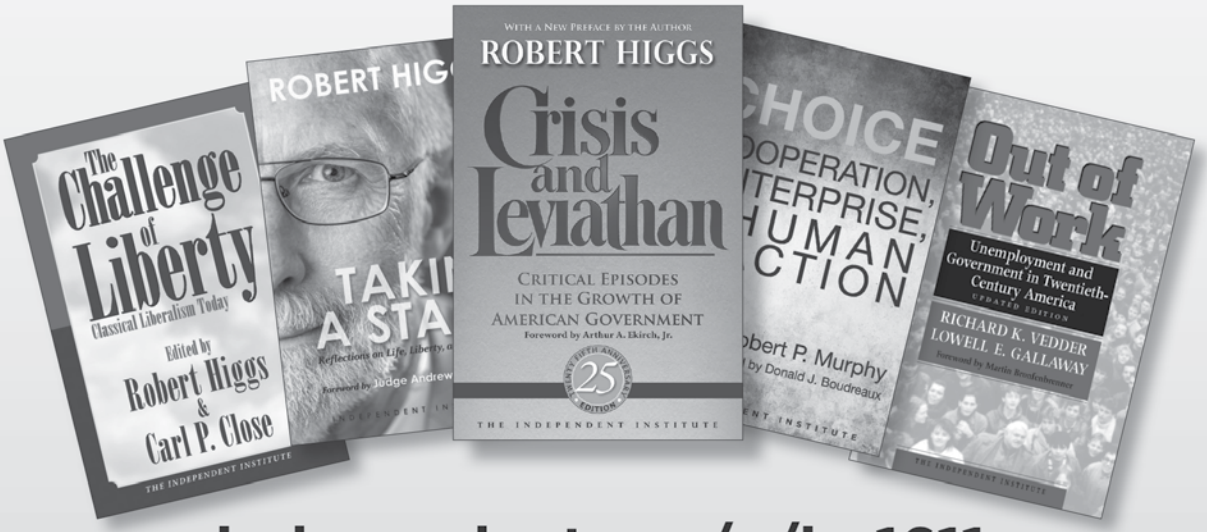

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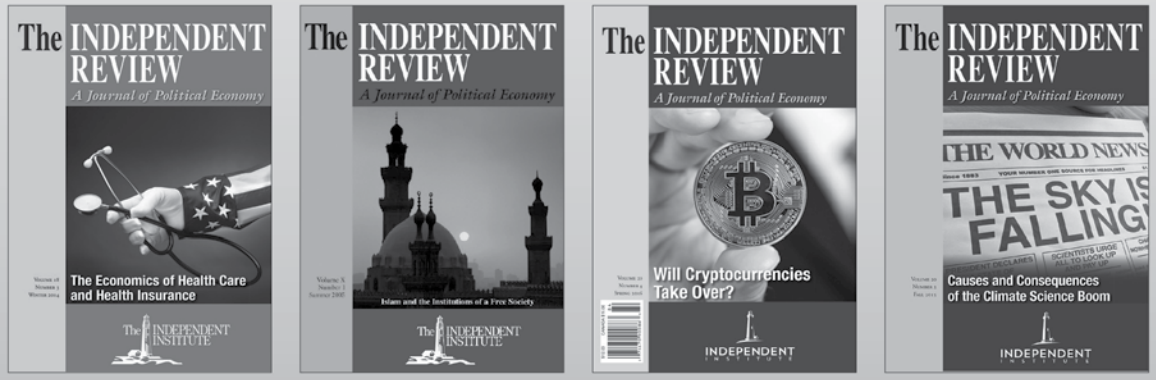

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