Despite rapid technological change and an aging infrastructure, utilities provide electricity at 99.9% reliability, and the cost of electricity as a share of household income is lower than ever before. But utilities are facing increasing challenges — economic, environmental, geographic, and technological — that are driving them to examine their business models and the policies that regulate them.

In June, the Sustainable Energy Initiative at the Stanford Graduate School of Business hosted federal and state regulators and representatives of both traditional and “grid edge” energy companies to discuss the changing business model of utilities. The two-day conference was conducted under Chatham House rules; all were free to speak openly, for information only. Here are some insights from the participants.

Utilities will not adopt a singular business model. Rather, new models will emerge in response to policy, economic, and technological forces particular to their region. Several utility companies have already taken important steps to collaborate with third-party solution providers to deploy new distributed energy resource (DER) technologies.

- **Progress will require taking on new risks.** The traditional utility model is grounded in low-risk capital investment and the expectation of earning a reasonable return, provided such investments are prudent and maintain high reliability. But question remain: Which actors should bear the increased risks of deploying new technologies that meet the public goals of consumer choice, transparency, low-carbon energy, reliability, affordability, and resiliency? And, to what extent should they share these risks? The answer is to develop new risk-sharing models that include customers, various levels of government, utilities and their shareholders, and solution providers. New models that pilot and demonstrate technologies in an expedient manner are required.

- **Value creation as well as cost reduction are crucial to the new business models.** Traditionally, utilities have been encouraged to control costs but not necessarily to create new value. DER technologies provide the potential to create new benefits for customers; the incentive structure for utilities should be designed to capture these potential benefits.

From a policy perspective, the approach is incremental. Apart from the leading states of New York, Texas, California, and Hawaii, most states have taken an incremental approach to new markets, rules and structures that incorporate distributed energy resources, environmental policies, and intermittent generation across multiple actors — utilities, solution providers, traditional consumers, and “prosumers,” consumers who provide a part of their own energy supply.

- **The pathway for change may be bottom-up or top-down, or more likely a mix.** New York REV has set a kind of top-down model where the utility will be established as an impartial distribution system operator that will facilitate the deployment of DER technologies through competitive third-party technology providers.
Similarly, Texas DREAM provided new rules to allow DERs to participate in wholesale markets. On the other hand, California (and Hawaii to a lesser extent) has taken a bottom-up approach where innovation at the grid edge is expected to drive institutional change.

- **Lines between traditional boundaries are blurred.** Greater deployment of DER challenges traditional boundaries of wholesale, transmission, distribution, and retail planning in the electricity sector. It is important to consider the interaction between these domains as changes are made to traditional regulatory/business models for utilities.

- **Incentives should match targeted system attributes.** There are several system attributes policymakers may care about when considering grid modernization. They range from reliability to affordability to customer satisfaction to economic development to carbon reductions, and each technological change to the grid can have positive and negative effects on them. Consequently, well-designed regulatory models for utilities should provide clear incentives that map out these multiple goals.

**The regulatory process itself requires a structural change.** In order to render guidance that is well reasoned and keeps pace with technological and complementary policy changes, regulatory agencies must become capable of accepting more information from multiple stakeholders, faster.

- **New stakeholders, more choices, and more potential solutions mean a more complex regulatory process.** Given growing interest in how electricity is produced and distributed and the increase in ways this can occur, more and different stakeholders have entered the rulemaking processes. State utility commissions that govern IOUs and municipal boards that govern MOUs are straining to incorporate information in a timely and comprehensive manner, given current procedures. Concurrent to — and in some cases preceding — utility business-model changes, rule-making processes need to be updated to accommodate these complexities.

- **Simplicity and regulatory certainty is important for technology providers and utilities.** While regulatory changes may be necessary for meeting new challenges, too much complexity or change can have negative consequences for businesses, entrepreneurs, and investors that operate in this environment. It is generally recognized that the grid and the utility that maintains it retain high value, but the confluence of rapid technology changes and pressures to address multiple social and environmental goals — even while maintaining high reliability and affordability — means that the regulator governance model and the utility business model must coevolve.

Convening stakeholders across interests, roles, and jurisdictions, in a neutral location without communication constraints, seems highly valuable.

- **There is no natural convening entity for utilities, policymakers, technology providers, and customers to share information outside of a rate case.** Sharing of information, appreciation of perspectives, and understanding of constraints across stakeholders provides a critical antecedent to effective and legitimate rulemaking. Across the electricity landscape, few venues exist for multi-stakeholder exchange, where ideas are debated and discussed for informational purposes only.

- **A university with appropriate expertise and interest could serve as such a convening entity.** The June conference at Stanford Business School provided one example of such a meeting.