

# 21ST CENTURY ELECTRICITY SYSTEM CEO FORUM SUMMARY

## NEW YORK, NY

On November 5th, 2013, leaders from New York's electric utility sector convened in New York City for the fourth 21st Century Electricity System CEO forum hosted by Advanced Energy Economy Institute (AEEI) and MIT's Industrial Performance Center (IPC). Forum participants, representing utilities, regulators and advanced energy providers, discussed how to accelerate innovation in the electric power sector in New York.

Central to the conversation was the question of how the electric utility sector – specifically consisting of utilities, technology and service providers, and regulators – can adapt to technological changes and evolving customer preferences that are reshaping the power sector. The forum aimed to identify the barriers and opportunities for redesigning regulatory and utility revenue models in power distribution and retail markets to enable innovation and allow for flexibility and responsiveness to changing market conditions.

***“The electric power sector is at the heart of the energy innovation challenge... and the electric power sector of today isn't up to the task: innovation in this sector is underpowered and underfinanced, and compared to other sectors with a stronger innovation record, it lacks opportunities for new entrants from outside the industry.”***

***“I think it's a general trend across the U.S. and the world: technology just keeps innovating, and the regulatory framework is going to have to change. Speed is going to be critical.”***

***“Business as usual is going to get more and more expensive. We want to offer the promise of more innovation because we think it will create more value to customers.”***

The following five points were repeatedly emphasized throughout the discussion:

1. Regulatory and policy goals and objectives must be clearly defined and well understood before redesigning the regulatory framework.
2. Regulation must evolve to allow innovative business models to emerge and take advantage of opportunities presented by new technologies and changing customer needs.
3. Several different business models may be capable of enabling innovation in the electricity distribution sector.
4. Understanding the changing role of the utility is critical to identifying and capitalizing on the opportunities created by technological change.
5. Developing new business models for distribution utilities and technology providers requires a clear understanding of customer needs.

Each of these points is expanded below.

## **1. Regulatory and policy goals and objectives must be clearly defined and understood before redesigning the regulatory framework.**

Meeting participants underscored the importance of clearly identifying policy and regulatory objectives before attempting to redesign existing power sector regulations. The importance of a clear timeline for implementation of new power sector policies and regulation was also emphasized. Clear policy objectives and stable regulation reduces uncertainty for industry participants and encourages the availability of financing.

***“So a fundamental question we have to think about addressing before landing on the appropriate business model is: what are the intended results of what we are trying to achieve? And I think it starts with policy.”***

***“The more consistent we are with a long-term view, the more we are going to be able to raise the financing and raise it quickly with the confidence that we’re going to sustain what we’ve envisioned.”***

Regulatory goals include maintaining reliability of supply -- an increasingly important concern given growing automation; affordability, especially because of the importance of affordable electricity to the state’s economic competitiveness; and universal access, of particular concern when designing markets. An additional goal was redesigning regulation to enable technological innovation.

***“I don't think the regulatory structure we have today allows for rapid technology innovation...”***

***“The end goal is that we have clean energy infrastructure, that we have a market system that [is] animated and customers are allowed to basically make that choice, and the market providers can innovate around technology and services without interference from regulatory requirements.”***

Participants emphasized the importance of considering the regional and state context when designing regulation. The meeting focused on characteristics that define New York’s electric power system – particularly its distribution sector – such as the bundled nature of transmission and distribution, a decline in customer rates, and declining load growth.

***“Every region – as we saw in Cambridge and Austin and Aspen – has slightly different requirements, and indeed every class of utility has slightly different requirements for what they are trying to solve.”***

## **2. Regulation must evolve to allow innovative business models to emerge.**

Meeting participants emphasized that once regulatory objectives are clearly defined, one of the key roles of regulation is to enable markets to develop to help meet those objectives. To do this, regulation and policy must be updated to keep pace with technological change. By removing regulatory barriers, innovative business models in the electric distribution industry can emerge to take advantage of opportunities presented by new technologies and changes in customer needs. All things being equal, regulatory and business structures that adapt to changing market and technology conditions, rather than predicting such conditions, are preferable.

***“The regulatory framework needs to be an enabler. There are a lot of companies out there that want to innovate, but we need to be sure that we have a framework to enable that innovation.”***

***“At the structural boundaries of the industry – whether it’s at the ISO/distribution utility boundary, or distribution utility/customer boundary – the regulatory structure and associated constraints are giving rise to some kinds of inefficiency, an inability to operate the system most efficiently, and that’s really the purpose of these forums: to identify constraints systematically and figure out a scalable way to circumvent those and figure out new opportunities to work around those.”***

***“At the end of the day, we need to get the incentive structures right – specifically for the utility. How do you unlock those opportunities or create new business models – a model for revenue generation for the utilities?”***

Meeting attendees also expressed a sense of urgency concerning the development of regulations that will enable power sector innovation, citing the importance to New York’s economic competitiveness. Participants pointed out that, while business models in many other industries depend upon market growth, in the electric power sector, in the absence of volumetric sales growth, low rates will help the utility customer base grow by attracting new businesses to the state.

***“You can’t run an economy, like we saw in Germany, if you lose the sense of where this is going to drive ultimate price and where you fit in the world economy.”***

***“From a New York State perspective, the reason we have to get this right on an expeditious basis is that, in the federal system, you are competing with 49 other states and you’re competing with the globe...companies locate here because they find the cost of energy to be very competitive.”***

### **3. Several different business models may be capable of enabling innovation in the electricity distribution sector.**

Attendees discussed business model(s) that are best suited to encouraging innovation and keeping pace with technological change. The link between regulatory design and business models was underscored.

***“The pace of technological change appears to be accelerating, particularly around the distribution end of the electricity sector. So, will the regulatory framework and the business model framework be able to keep pace with this so that as new opportunities come up, you can take advantage of those opportunities in a timely and efficient manner?”***

***“There are some more detailed questions for utilities – like what services are offered, how they’re offered. And then there’s the question about what is the regulatory model, and that’s about what are utilities’ obligations, what are the obligations of non-utility companies, how do they recover costs? So that’s why the business model and regulatory structure are so closely linked.”***

***“We need a model that will allow us to evolve... We de-risked a lot of it and are moving to a more transactive model where there’s more upside than downside. Are the utilities equipped to deal with that sort of model?”***

Two distribution utility business models were discussed: a Distribution System Operator (DSO) model and a Distribution Service Provider (DSP) model. In the DSO model, the distribution utility acts as a neutral provider of network services, maintaining network infrastructure as a platform for other energy service providers (i.e. ESCOs) and end-use customers to utilize. The DSO serves as an enabler of a market for energy services. In the DSP model, the distribution utility plays a more active role in providing downstream energy services. The DSP serves as the primary interface between customers, energy service providers, and the New York Independent System Operator (NYISO).

Some participants took the view that the DSO model is best suited for encouraging innovation by allowing the participation of new market actors alongside the distribution utility.

***“If you are looking for more innovation on the customer side, you would go with the DSO model. In the DSP model, everything is coordinated, managed, and procured by the utility.”***

Others argued that the DSP model more effectively encourages innovation. With a clear regulatory impetus to transform existing business models, the DSP model can yield significant innovation. Additionally, attendees stressed the importance of the participation of the distribution utility in delivering energy services and driving innovation, rather than solely providing network access. They pointed out that end-use customers will not demand new, different energy services, and will not create demand-pull for innovation. Cited as examples were attempts by Google and Microsoft to launch programs to dis-intermediate utilities, give customers direct access to energy information, and thereby enable customers to make smarter decisions about energy use. Both attempts failed within three years of their launches because of insufficient customer demand for the programs.

***“If utilities were under the gun to transform their business, you’d get tremendous innovation. Not just in this industry, but in lots of industries, innovation has come from big companies in need of transformation, then smaller companies servicing that need and transforming the market. You need to create demand from somewhere for the market to be transformed.”***

***“I think that the DSP, at least for the vast number of market customers, is the only choice – particularly for NY state... you have less than 1% of household disposable income spent on electricity. If you want innovation to happen, it won’t come from the people who are spending less than 1% of their income on electricity – they’re not going to be generating demand for energy services from independent ESCOs and efficiency providers and solar. You need to have the utility playing a role and a market in place, which incents them to play a role to deliver those services.”***

The lack of customer demand for new energy services was attributed both to the lack of customer knowledge of the day-to-day operations of the power sector and to the absence of aggregated consumer interest.

***"I think most customers think about energy about as much as I think about how the internet gets to my house and how to optimize the bandwidth. And I'll tell you how much time I spend on that: practically no time."***

***"It's not a lack of interest from consumers; it's a lack of aggregated power...unless there's a strong enough consumer voice, there won't be demand."***

Some meeting attendees took the position that both the DSO and DSP models may be well suited to accelerating innovation in New York's power sector, and that some combination of the two may arise. For example, regulation may begin by defining the industry structure with the DSO model and later introduce the features of the DSP model.

***"Both models can work; they both need to be tweaked a bit. But you really do need to say: 'here's what we're trying to preserve, and here's what we're willing to change.' I think either can work after you decide what the customers want and what the big picture goals are."***

***"Well, maybe there is a hybrid model. You have more of the third parties introducing innovation, but if you don't have something approaching the DSO, you may be limiting yourself to those opportunities that are going to change the way people think about energy and how they consume it."***

***"The DSP seems better to achieve policy goals... the DSO model seems better to pursue open market opportunities and promote innovation. I think you would start with the DSO model and let the innovation drive it, and then gently lay the DSP model over that and think about how to set rules..."***

A key concern about both new business models and alterations of existing business models was over the implications for the availability of financing for critical investments. Attendees offered a reminder that successfully raising capital requires regulation that enables stable, long-term markets to flourish.

***"We are a highly capital intensive industry. Changing that model will dramatically alter whether we can get financing or not get financing...as a regulated utility, your risk is low. That lets us get a lot of capital. If you change that, you may find that the capital is not there or that the cost of capital is not low."***

Multiple attendees noted that, whichever business model emerges, the current cost-of-service remuneration scheme does not allow for rapid innovation among utilities. Some attendees instead called for some form of performance-based remuneration. They also identified the need for remuneration regulation to more effectively balance incentives for capital expenditures (CAPEX) and operating expenditures (OPEX).

***"I don't think that a cost-of-service, rate-base structure is the platform that we're going to have in the future. I think it's going to be something different. I look at the telephone companies: when's the last time the telephone company worried about their cost of service? We're not coming in with a sense of 'this is what it'll look like.' We're coming in with a sense that business as usual is not the path forward."***

***“A lot of what we try to do is optimize the system we have to the customer preferences we see...We are constantly trying to re-optimize based on changing technology and changing customer preferences. But the big limitation that we have is this rate-based model, where the only way to get paid is to make investments... It’s a fundamental institution: we are optimizing, but some options are not on the table for us.”***

***“For the idea of innovation, one of the things we want to focus on is CAPEX versus OPEX – I think a lot of the new technologies and innovation coming to the market are OPEX, and we need a policy framework in place to balance large OPEX and CAPEX.”***

#### **4. Understanding the changing role of the utility is critical to identifying and capitalizing on the opportunities created by technological change.**

The boundaries of the distribution utility are changing, altering interactions between the distribution company and upstream wholesale markets and system operators, as well as downstream power sector participants and customers. The business models that emerge for distribution utilities will define the roles and services offered by the traditional utility and by new market entrants.

***“What’s really happening here is that the boundaries of the natural monopoly are changing.”***

***“You really need to look at the boundary of the distribution utility. There are a lot of things on the wholesale level that are going to drive change in the distribution sector that the distribution company doesn’t have that much control over.”***

***“We have to ask: are you fundamentally willing to change your pricing, revenue, and risk structure, or are you saying that ‘I want third parties to be able to do that and I want to be able to stay in a box.’”***

Participants discussed how distribution utilities can play a leading role in data and information provision. While some individuals identified data and information services as a clear opportunity for utilities – such as providing commercial and industrial customers more detailed information about the drivers of their electricity expenditures – other participants remained skeptical about the utility’s role in information services. They noted the deflationary effect and impact on volumetric energy sales that result from using data to inform customer energy choices and encourage energy efficiency. Others responded, however, that greater energy efficiency is often accompanied by increased consumption in a customer rebound effect. Additionally, electric utilities are well positioned to provide expertise and guidance to customers on the easiest ways to improve energy efficiency, and can offer that guidance as a service.

***“On the data side, I question the monetizability of data for the simple reason that it’s deflationary in the market. Either way, the end result is that [utilities] are selling less.”***

***“Most studies suggest that every program that’s been put in place for customers to save on electricity, they invest more in energy assets. Like putting in another refrigerator in the basement.”***

***"I would love to be an energy efficiency expert in my home, but what I don't have is the expertise or information. If I can click a button and have someone at my house to show me something or tweak something that will make it easy for me... You're right, I don't want to spend a lot of time on this, but the trusted entity becomes my utility that I can trust to point these things out to me."***

Additionally, some attendees noted that lower customer energy consumption in certain parts of a service area could prove beneficial to the distribution utility by lowering expansion costs.

***"Customers don't want electricity. In Manhattan, the cost of distribution is phenomenal, well above the average rate. So, if we can keep the demand from growing in certain areas, that's great, because I borrow less money to build that substation, I pay less interest, etc. There is a bit of a goal in the industry not to keep rates up. And a way to do that is to try to get customers to use less."***

## **5. Developing new business models for distribution utilities and technology providers requires a clear understanding of customer needs.**

Customers are placing greater emphasis on reliability, resiliency, flexibility, responsiveness, and environmental sustainability, and this is placing new demands on the power system. However, the desire for such capabilities is highly asymmetric across the customer base, creating increasingly differentiated demand for energy services. Individuals and communities are increasingly keen on gaining control over their energy use and costs. This suggests the need for more diverse offerings of energy and electricity products and services.

Some attendees pointed out that even with the ability to choose amongst retailers or choose amongst the offerings of ESCOs, many customers do not have access to a diverse array of products and services. Instead, they see an array of prices on what is still essentially a commodity. There are opportunities for utilities to innovate and offer more value to customers with a wider set of products and energy services.

***"We've beaten ourselves over the last 20 years into thinking that it's all about driving the bill down. If we could start thinking in terms of basic dial tone and basic power and then a whole lot of other products and services, and really start thinking about service and product diversity, that enables things that we've never thought about."***

While creating value for customers and meeting customer needs is a core aim of the electric utility, participants acknowledged that identifying unmet customer needs can be challenging. Customers typically do not have a deep understanding of the products and services that can be offered by the electric utility and therefore are unlikely to generate demand for a new offering. As a result, utilities are often unsure of what new products can address unmet customer needs. Like the regional variation in utility models, regulatory frameworks, and policy goals, customer needs also differ by region.

***"From a customer perspective, how do you know what your customers want if your customers don't know what we can do?"***

***"The value of the grid is going up – the demands on it, the needs it'll serve... DG is not a threat – I view those people as customers, so we need hard data and hard analysis on defining what the people who need the grid need."***

## Next steps

The meeting concluded with attendees calling for more detailed discussions among all of the relevant parties, including adding the consumer perspective and that of other distributed energy resource providers. The participants decided to form a Working Group with representatives of the companies participating in the CEO Forum that would continue to discuss the above issues in more detail over the next few months to develop a position paper on the topic. Future discussions should focus on defining clear goals and objectives from a consumer, market, and regulatory perspective, and on defining potential scenarios or outcomes for the future power sector. Questions related to “Utility 2.0” in the context of state energy policy should be addressed.

Attendees also encouraged incremental steps, noting that first-stage implementation can provide near-term examples of success that are critical milestones en route to larger implementation.

***“Is it utility 2.0 or utility regulation 2.0?”***

***“It’s market design 2.0 – figuring out the rules that will shape how investment decision makers make their choices – that’ll get us to our goals of system efficiency, grid reliability, and affordability. Taking into account value added and not just the lowest bill: that informs us on what we need to mobilize investments, how to set rates, how to spawn business model innovation.”***

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