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Regulatory Accelerators for Building Transactive Energy Markets

My talk would focus upon “regulatory accelerators” for transitioning from a predominant reliance upon administrative mechanisms, under the legacy utility paradigm, to market-based mechanisms. Not only have technology, policy and market forces put pressure in general on the legacy regulatory compact to change, but growing digitalization, electrification and distributed energy resources are calling for fundamental changes in regulatory responses to meet new power system and customer needs. Moreover, the pace and nature of change are clarifying the need to revamp, not only the Utility Regulatory Paradigm, but also the architecture of the Grid Operating System, to respond to rapidly shifting market conditions, continual technology innovation, and new business opportunities.

In the 21st century, our grid needs to be flexible, interactive, fractile and innovative. Exponentially proliferating nodes of power injection and withdrawal already are challenging traditional grid architecture and regulatory administrative processes, which are unable to keep pace with these developments. Increasingly, market interactions will be needed to coordinate and manage multi-directional power, information and transactional flows arising within the electric sector. Transitioning to a 21st century grid will require the kinds of regulatory interventions that can overcome “regulatory lag” and align utilities financial interests with long-term “customer value.”

My presentation would first address the barriers and disincentives under the current utility rules that are impeding the building of a transactive energy marketplace. My talk would then address the need for “regulatory accelerators” to change the incentives and the roles/responsibilities of utilities in a manner to “re-tool” the regulatory compact to attract investment in a new grid operating system. My premise is that both a change in the “Rules of the Road” and our grid architecture are needed to support “peer to peer” market transactions within the electric sector.

Building upon reforms at State and Federal governmental levels, my talk will discuss regulatory innovations within the energy sector that could “jump-start” fundamental utility regulatory change. My talk will explain the nexus between the following kinds of regulatory mechanisms and creating the “culture” for a “transactive energy” marketplace: Developing “products and services platforms” to animate/facilitate market transactions; Developing “Urban Hubs” within an Internet of Things framework; Delineating Sustainable and Resilient Economic Development Zones/Net Zero Energy Districts/“Micro-Municipalization;” Establishing a new “Microgrid Integrated Energy Services Provider;” Moving from Building-Scale to “Community-Scale Clean Energy and Energy Efficiency Standards for Land-use Planning and Development; Aligning Utility and Community Processes for Resource Planning and Development; Increasing the accuracy, and spatial and temporal granularity of Electricity Pricing and Charges; Using new Modelling and Analytical Tools to create a consistent, verifiable methodology for assessing utility host capacity and the net locational value of DER and Microgrids to the Grid and Communities; Increasing the Openness of the Utility Network, pro-active DSO network management and Information Sharing; Transmission and Distribution Systems Coordination; Distribution Automation with Data Management and Analytics; “Performance-based Metrics” shifting towards “value-based” utility compensation and building customer behavioral “elasticity.”