



Utility of the Future Center


Background and Justification




States across the nation continue to adopt policies aimed at de-centralizing and de-carbonizing their energy systems through Renewable Portfolio Standards and Energy Efficiency Resource Standards, as well as a multitude of other policies. Electric utilities are not only the implementers in chief of these policies, but they also face transformational change if these policies succeed in allowing consumers to produce their own energy, thereby bypassing the utilities entirely.

Among the drivers of change facing the nation's electricity sector are:

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- (1) A future where a high proportion of renewables and especially solar energy is delivered to the electricity grid.
 - (2) A rapid expansion in the number of utility customers (residential and business) investing in new technologies for energy production, energy storage, and energy efficiency.
 - (3) The already ongoing shift toward independent system operators and electricity markets.
 - (4) Regulatory models and emerging markets that shift revenues from utilities to other participants in the energy system.



A few utilities across the country, including Arizona Public Service Company, Tucson Electric Power Company, Duke Energy, and Pacific Gas and Electric Company, have embraced the implementation of these policies, and have begun to consider how they can evolve over time in a way that allows them to benefit from, rather than fall victim to, creative destruction in the utility industry caused by the proliferation of distributed generation and energy efficiency.



These looming changes, and the sense that the utility of the future will by necessity be far different from the integrated monopoly utility of today, is leading many to the conclusion that utilities as well as their regulators will need to design new regulations and business models that allow the utilities to transition themselves into the utility of the future. Indeed, making sure that there is an orderly change-over,

in which both utilities and clean energy companies and their customers can prosper through the move, is critical to ensuring a clean energy future. A few entities and organizations have begun formally looking at these questions:

The Department of Energy has signaled in recent months its intention to take seriously the investment and regulatory questions surrounding the transition to a clean energy future by hiring new Staff, attending roundtable discussions and organizing workshops about the topic.

A handful of utilities, including Arizona Public Service Company, have begun internal dialogues to discuss “deep uncertainty” scenarios revolving around a more decentralized vision of energy provisioning. And the National Association of Regulatory Commissioners (NARUC) held a conference in 2009 in Dallas, Texas, that asked participants to imagine what utilities will look like in 10 or 20 years. NARUC has expressed an interest over the past several years in being a facilitator for this important discussion.

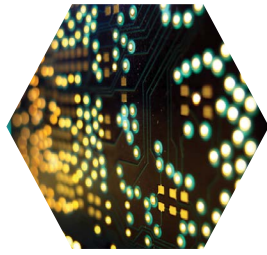
The Proposal

Arizona State University is in a unique position to launch the nation's first Utility of the Future Center designed to assist utilities, regulators and consumers in making the move to a clean energy future.

The Center will have a three pronged focus:

- (1) The Center will establish a utility working group that will provide critical assistance to utilities that are looking to develop mid and long-term strategies for addressing the coming transition to decentralized energy provisioning. Utility-focused services of the Center will include inter-disciplinary modeling for utilities that will assess the likely timing of grid parity or the commercialization of storage and widely available energy efficiency leading to mass-decentralization and load loss for the utilities; regular workshops for utility staff and executives that bring them together with scholars at ASU and elsewhere to discuss

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emerging issues and to develop new business models and rate designs for utilities; monitoring of Public Utility Commission dockets across the country to determine new rate designs, mechanisms and distributed generation policies that are being proposed by and for utilities, and a rapid response outreach program that uses the monitoring system to inform other utilities of what is happening outside their jurisdictions; and individual briefings and studies that are designed to assist the utilities in working through specific issues

- (2) The Center will also serve as an advisory center for regulators who are grappling with how best to design regulatory paradigms that will facilitate both clean energy and an orderly transition by vertically integrated monopolies into a more competitive marketplace..
- (3) Lastly, the Center will focus on assisting consumers and communities with the transition to an environment in which they increasingly provide, monitor and control their own energy production and consumption.

ASU is already home to some of the nation's top thought leaders on utilities and sustainable energy policy, including Kris Mayes, the former Chairman of the Arizona Corporation Commission, ASU law professor and a frequent speaker nationally on the topic of the Utility of the Future; Bill Post, former CEO of Pinnacle West and Chair of the Board of Directors of the ASU Foundation; Clark Miller, Associate Director of the Consortium for Science, Policy & Outcomes, the nation's top-ranked university science and technology policy think tank; Gary Dirks, Director of Lightworks and former President of BP Asia Pacific; Vijay Vittal, Director of the Power Systems Engineering Research Center; Adam Chodorow, ASU law professor and former attorney at Pacific Gas and Electric Company; Bud Annan, former Director of Solar Programs at the Department of Energy; and the team at AzSmart, whose work on distributed generation could become

useful to utilities that get serious about modeling future scenarios. Arizona State University is also home to the world's largest university-based solar micro-grid, with 14 megawatts of solar installed on its campuses to date, making it an ideal physical location for the Utility of the Future Center.

Required Resources

The Center Director will be Kris Mayes. The Center will also establish a Co-Director position to be selected from the utility sector. Start-up funding will be provided by Lightworks at Arizona State University; Private sector investors, including the nation's investor owned utility community, will be critical to the full establishment and operation of the Center. Other potential sources of funding include:

- The Federal Energy Regulatory Commission
- The Department of Energy
- NARUC
- Foundations
- Clean energy companies

Each of these entities has expressed an interest in the Utility of the Future, and has a stake in seeing that utilities prepare for the future.

Timeframe for Action

ASU is moving expeditiously to establish the nation's first Utility of the Future Center. Funding for the Center's operations commenced with the funding infusion by Lightworks at ASU of \$117,000 for the Energy Policy Innovations Council at the SDO College of Law, which will perform the policy outreach function of the Center. The Center aims to bring additional funding and partners on board by summer 2012, and commence activities in the summer and Fall of 2012.



Kris Mayes
Director

Faculty Director, Program on Law and Sustainability, Sandra Day O'Connor College of Law