

Final Report on Kentucky's Participation in NGA Policy Academy on Power Sector Modernization

PREPARED BY THE OFFICE OF ENERGY POLICY

KENTUCKY'S EVOLVING ELECTRICITY SECTOR: CHALLENGES AND OPPORTUNITIES

A Report from the Office of Energy Policy on an Initiative to Explore Power Sector Modernization

INTRODUCTION

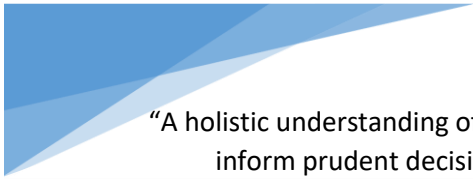
In late fall of 2016, in response to a [Request for Proposals](#), the Energy and Environment Cabinet (EEC) submitted an application to participate in the National Governor's Association Policy Academy on Power Sector Modernization¹ to explore electricity sector trends and analyze the challenges and opportunities presented by a changing energy landscape. EEC's intent then and now was not to drive changes within the electricity sector, but rather to help guide the state (state government officials, policymakers, stakeholders) as inevitable changes occur and to ensure the state can position itself to meet a broad range of corporate energy needs. NGA Policy Academies are designed to provide state officials and stakeholders technical assistance and guidance to help evaluate options and formulate recommendations to help states arrive at optimum policy outcomes. Past NGA policy academies have covered topics such as education, health care, and public safety. For this particular policy academy, four states were selected: Kentucky, Rhode Island, Oregon, and Washington. The states' initiatives are distinct from another, however, through two meetings during the course of the academy, state teams are afforded the opportunity to share lessons learned as well as interact with policy experts and practitioners from national laboratories, universities, and others. In addition, the EEC participated in an in-state retreat that brought together staff from state agencies to discuss and explore issues affecting Kentucky's energy landscape. The EEC Team developed the following guiding principles for Kentucky's participation in the NGA Policy Academy:

- Maintain regulatory compact while allowing for new energy market opportunities.
- Protect low-cost requirements of existing manufacturers & attract new or retain existing businesses that have sustainability goals.
- Optimize resource deployment where beneficial, including at critical facilities.
- Increase awareness and provide transparency in power sector modernization.

By working with a small group of states on a given topic, the NGA can focus its resources, including access to experts in a given field, and the states chosen to participate in a Policy Academy can serve as a resource to other states.

This report provides background on electricity sector trends and how these trends are affecting or have the potential to affect utilities, their customers, and Kentucky's economic well-being. The report also provides a summary of the stakeholder meetings, including identified priority challenges, solutions, and opportunities; an overview of activities in other states that are taking varying approaches to addressing

¹ The National Governors Association conducts policy academies that provide intensive, targeted technical assistance to states over a 12+ month process. These academies provide a forum for state government officials in diverse but related agencies (e.g., energy, air quality) to draw upon expertise within the state and from experts across the country.



“A holistic understanding of these issues can inform prudent decision-making; avoid unintended consequences; and help support the goals of growing the economy, protecting the environment, and enhancing energy security. . . .The goal of state government should be to ensure these shifts in the energy landscape are fair to all ratepayers, allow utilities to remain viable, and help to create opportunities for economic growth.”

[EEC Policy Academy Application.](#)

are all pursuing renewable energy options for their facilities. We want to help these and other companies achieve their energy goals in a way that is fair to all customers. This objective has been a primary focus of our participation in the policy academy.

These trends, along with continuing advances in energy storage and cost declines in renewable technologies, will continue, and thus greater pressures will be placed on the utility business model (more on how these trends affect utilities and thus their customers is provided in the following pages). These trends are occurring at varying paces and by varying degrees in all states, and the challenges and opportunities they present also vary by state.

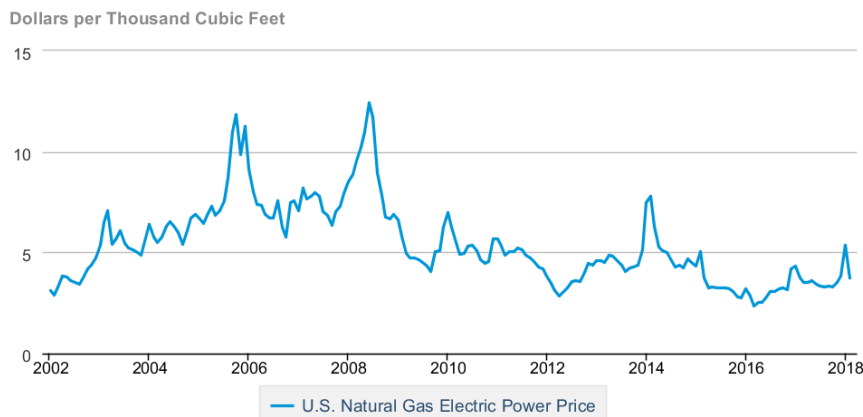
While many of these trends are not unique to Kentucky, as a coal-producing state, the Commonwealth has been seriously affected by the nationwide shift toward natural gas for electricity generation—resulting in the lowest levels of coal production and employment since the 1920s and leaving coal-producing counties economically devastated. Thus, nationwide energy trends are having a disproportionate impact on some states and have implications beyond impacts to utilities.

similar issues; and a resource guide for those interested in pursuing these topics in more depth. We also include a section on next steps.

ELECTRICITY SECTOR TRENDS

Nationally, market forces such as the low cost of natural gas, decreasing costs of renewables and incentives for renewables that skew markets, flattening and in some cases falling demand for electricity and a proliferation of corporate sustainability goals are affecting the electricity landscape. In Kentucky, L’Oreal, Toyota, and LexMark

U.S. Natural Gas Electric Power Price



Source: U.S. Energy Information Administration

In addition to the trends mentioned above, federal regulations such as the Mercury and Air Toxics Standards and others that had accelerated compliance deadlines, have had a significant impact in Kentucky. Utilities in Kentucky have invested more than \$4 billion in compliance—either by installing emissions control equipment or by closing coal units (and replacing with natural gas in some cases). Environmental compliance costs are being borne by Kentucky ratepayers, as authorized by Kentucky’s statutes allowing cost recovery for environmental compliance through a surcharge mechanism and/or through a Certificate of Public Convenience and Necessity (CPCN) as part of a compliance plan. The CPCN process ensures least-cost principles are followed in environmental compliance plans. As a result of these investments, Kentucky’s energy policy has stressed the importance of maintaining the viability of these coal-generation assets.²

Kentucky’s Electricity Profile

- The state made the decision around 2000 not to pursue electricity restructuring³. Concerns over price volatility were of specific concern. The decision to adopt a “wait-and-see” approach to electricity restructuring has appeared to serve Kentucky ratepayers well. Kentucky’s electricity rates have remained among the lowest in the U.S., and the state’s energy-intensive manufacturing base has benefited from stable, more predictable prices over the long-term.
- Kentucky’s retail electric rates are set by the Public Service Commission for the investor owned utilities (Duke Energy Kentucky, Kentucky Power, and LGE/KU) and the two electric generating cooperatives (East Kentucky Power Cooperative and Big Rivers Electric Cooperative) and their owner-member cooperatives. The Public Service Commission does not have jurisdiction over the municipal electrical utilities or the cooperatives and municipalities served by the Tennessee Valley Authority.
- As with many other states, Kentucky has excess generation capacity. Load growth has flattened, or in some utility territories, is declining. In some situations, the utilities are grappling with a system that was built for a larger customer base and they are losing population/industry. In other cases, even as customer numbers increase, the load is decreasing.
- The state does not have a Renewable Portfolio Standard or an Energy Efficiency Resource Standard. However, Kentucky’s generation portfolio is changing, and utilities in Kentucky are installing renewable generation.
- While distributed energy resources are a small percentage of overall electricity production, these too are growing, with certain areas experiencing larger growth rates than others. Since 2014, Kentucky’s generation profile has shifted from 92 percent coal-fired to around 79 percent coal-fired today, with natural gas and some additional hydro generation making up the difference. In fact, in 2016, half of all new hydroelectricity generating capacity brought into service in the United States was located in Kentucky, and hydropower supplied 88% of Kentucky’s renewable electricity generation.
- Kentucky’s net metering statute applies to installations (solar, wind, hydro, biomass and biogas) up to 30 kW. If the cumulative generating capacity of net-metered systems reaches 1.0% of a

² https://psc.ky.gov/agencies/psc/press/052016/ECP-ESM_presentation_KU-LGE_forweb2016.pdf

³ Restructuring Kentucky’s Electric Utility Industry: An Assessment of and Recommendation for Future Action in Kentucky, Final Report Special Task Force on Electricity Restructuring, Research Report 299, Sept. 2000, Legislative Research Commission

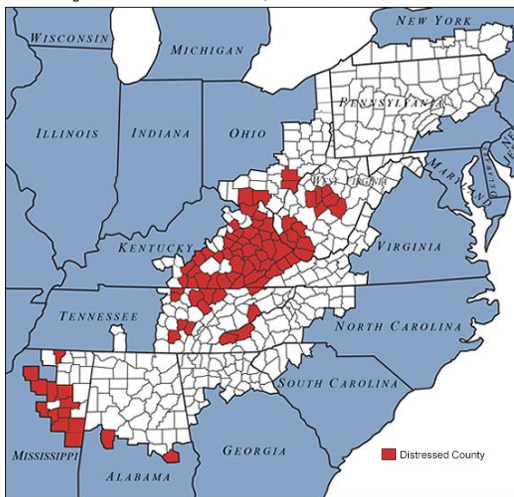
utility's single-hour peak load during the previous year, the PSC may limit the utility's obligation to offer net metering. As is occurring in many other states, there is debate regarding current net metering statutes and whether other approaches to compensating net metering customers should be implemented.

- Another trend in the sector is the commitment from utility companies to reduce carbon dioxide emissions. This includes utilities that operate or that are based in Kentucky.
 - LGE&KU parent company PPL announced in January 2018 a goal to cut carbon dioxide emissions 70 percent from 2010 levels by 2050.
 - Kentucky Power parent American Electric Power has announced a planned reduction in carbon dioxide emissions of 60 percent from 2000 levels by 2030 and 80 percent from 2000 levels by 2050.
 - Tennessee Valley Authority has climate change mitigation policies to minimize its carbon footprint and cut greenhouse gases.
 - Duke Energy has announced it plans to reduce carbon dioxide emissions by 40 percent from 2005 levels by 2030.

KEY DEMOGRAPHIC AND ECONOMIC CONSIDERATIONS

- Population changes within the state are not uniform. While Kentucky's population has grown modestly in recent years, and is projected to grow over the coming decade, rural counties are losing population, and further declines are expected in these areas.
- Kentucky's poverty rate is close to 20 percent. The state ranks 47th in poverty. As with population decline, rural areas also experience higher levels of poverty.

ARC-Designated Distressed Counties, Fiscal Year 2018



Created by the Appalachian Regional Commission
 Data Sources:
 Unemployment data: U.S. Department of Labor, Bureau of Labor Statistics, LAUS, 2013-2015
 Income data: U.S. Department of Commerce, Bureau of Economic Analysis, REIS, 2015
 Poverty data: U.S. Department of Commerce, Bureau of the Census, American Community Survey, 2011-2015

- Kentucky has a large proportion of counties that are designated as distressed by the Appalachian Regional Commission. The decline in Kentucky's coal industry worsened the poverty rate and increased the outmigration rate for many counties.

- While Kentucky's electricity rates are relatively low, residential bills are higher than the national average. Kentucky's low and moderate income families pay a much higher share of their household budgets on energy costs.

- Kentucky's industrial energy consumption is higher than the national average because the state is home to several energy-intensive industries such as aluminum smelting, stainless steel production, petroleum refining, aerospace, etc. Automobile manufacturing is also a leading

industry in the state, with three major manufacturers and multiple hundreds of related suppliers.

- Kentucky's affordable electricity costs have helped foster a strong and growing manufacturing sector that employs more than 260,000 Kentuckians. Today, however, the ingredients necessary to enhance economic growth and competitiveness are becoming more complex.

PUTTING ELECTRICITY SECTOR CHANGES INTO CONTEXT

One of our primary goals of the policy academy initiative was to provide education about Kentucky's electricity landscape, including how policies, regulations, technologies, and economics interplay in addressing challenges and opportunities. It is important to have an open, transparent dialogue, with the hope that as inevitable changes occur in the electricity sector we optimize opportunities—for the utilities and for utility customers—and minimize unintended consequences that might result from piecemeal policy initiatives or statutory changes.

An understanding of the “regulatory compact” can help frame the issues.

Understanding the Regulatory Compact

Regulated utilities in Kentucky serve a defined territory with an obligation to serve the customers in their territory and the ability to earn a return on their investments to serve those customers. Kentucky's ratemaking process for the state's regulated utilities (investor owned utilities and generation and transmission cooperatives) is governed by statutes. Rates must be “fair, just, and reasonable,” and investors are entitled to an opportunity to earn a return on equity. It is a two-part process, in which first the utility's revenue requirement is determined (by the PSC) and then rates are designed.

Ratemaking Formula

Final revenue requirement = allowable expenses and the opportunity to earn a reasonable rate of return on equity (investor-owned) or to meet TIER requirement (coops)

$$R = O + (V - D)r$$

- *R is the utility's total revenue requirement or rate level. This is the total amount of money a regulator allows a utility to earn.*
- *O is the utility's operating expenses.*
- *V is the gross value of the utility's tangible and intangible property.*
- *D is the utility's accrued depreciation. Combined (V - D) constitute the utility's rate base, also known as its capital investment.*
- *r is the rate of return a utility is allowed to earn on its capital investment or on its rate base.*

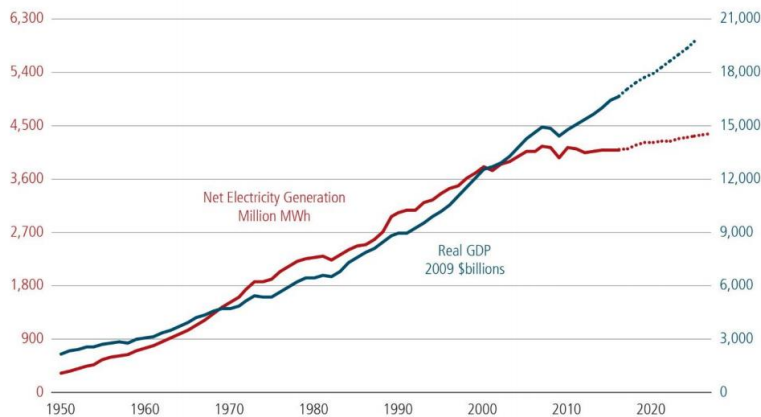
Rate Design:

- Allocates costs and revenue over various rate classes – residential, commercial, and industrial.
- As part of rate application, utilities must submit a “cost of service” study that determines how much it costs to serve each rate class.
- In general, larger customers have lower cost of service; among the major customer classes, cost of service is highest for residential class
- Fixed vs. variable cost allocation:
 - The PSC uses a cost of service study as a guideline, but rates are not set to strictly reflect costs.
 - Industrial customers may pay higher rates than cost of service study would indicate.
 - Residential rates, while higher than industrial, may not fully cover the cost of service.
- Some rebalancing of costs and rates typically occurs in every rate case.

- The PSC has adopted a gradual approach to attaining fully balanced rates.

Until the last 10 years or so, electric utilities were serving an increasing demand for electricity as the population grew and as industries developed and expanded. In many cases, generation was built to serve a known quantity of demand—such as to serve a large industrial customer (e.g., aluminum smelters). There were economies of scale—utility profits grew as the demand for their electricity increased and customers benefited from low-cost, reliable power. Today, most utilities nationwide are faced with declining or flattening load and excess capacity. Under traditional cost of service rate-making, a utility’s fixed costs have to be recovered through a narrower customer base, thereby increasing costs for remaining customers. The challenge of declining load and the impact on ratepayers was mentioned numerous times during our stakeholder meetings. This trend is not just a challenge confronting traditionally regulated utilities.

U.S. GDP and Net Electricity Production



During most of the second half of 20th century, U.S. electricity demand was tied to economic growth. Since about 2005 electricity demand has been nearly flat, despite GDP growth following the 2008 recession. This is due to several factors, including efficiency and the general shift from manufacturing to a more service oriented economy.

U.S. DOE Staff Report on Electricity Markets and Reliability

Source: U.S. Energy Information Administration

POWER SECTOR MODERNIZATION—OTHER STATES’ AND NATIONAL PERSPECTIVES & APPROACHES

Most states are trying to navigate a number of challenges in the electricity sector. State actions range from utility-led proposals for advanced metering infrastructure deployment to studies regarding energy storage or rate reform. Agencies within in the U.S. Department of Energy, utility trade groups (such as EPRI, EEI), NGOs, and others are engaged in grid/power sector modernization research and policy analysis. Many challenges center on how utilities and utility regulators can navigate an increasing presence of distributed energy resources. In November 2016, the National Association of Regulatory Utility Commissioners published a guide to help regulators specifically but also policymakers, energy office officials, and others prepare for and respond to rapid changes in the “delivery, consumption, and generation” of electricity.⁴

⁴ *Distributed Energy Resources Rate Design and Compensation: A Manual Prepared by the NARUC Staff Subcommittee on Rate Design*, November 2016.

Power sector or grid modernization can take on different meanings, often depending on a particular entity’s perspective. The North Carolina Clean Energy Technology Center, which publishes status reports on state actions related to grid modernization, defines it as actions that make “the electricity system more resilient, responsive, and interactive.” According to the NCCTC, “in 2017, 39 states plus DC took a total of 288 policy and deployment actions related to grid modernization, utility business model and rate reform, energy storage, microgrids, and demand response.” A major trend in 2017 was states collaborating with utilities on studies or pilot projects. Most pilot projects were focused on time-varying rates or deployment of energy storage and microgrids.⁵

At the federal level, the U.S. Department of Energy has a Grid Modernization Initiative that aims to address attributes of today’s grid that do not “meet the demands of the 21st century and beyond.” The agency describes the five key trends that are challenging capacity of the grid:

- 1) Changing types and characteristics of electric generation;
- 2) Growing demands for a more resilient, reliable, and cyber secure grid;
- 3) Growing supply-side and demand-side opportunities for customers to participate in electricity markets;
- 4) Emerging electricity information and control systems; and
- 5) An aging electricity infrastructure.⁶

This is a multi-year initiative that involves utilities, research organizations, states, grid operators, and more than 100 companies. The goal is to ensure the 21st power grid provides “resilient, reliable, secure, affordable, flexible, and sustainable electricity.” Of note is a project in Kentucky to assist UPS in developing a microgrid at its facility in Louisville.

Utility trade associations and the national laboratories are also engaged in technology and policy research and analyses. The Lawrence Berkeley Laboratory has a Future Electric Utility Regulation Advisory Group composed of national experts, including state regulators, academia, utilities, and consumer advocates. LBL also publishes a series of reports as part of Future Electric Utility Regulation. The reports provide multiple perspectives on these complex issues. Nine reports have been published, covering such topics as distributed energy resources regulatory responses, planning and market design, and cost recovery.⁷

We included this section to highlight the complexity surrounding the changes occurring in the electricity sector. A recurring theme is the unprecedented pace and degree of changes occurring and the uncertainty in planning and forecasting.

STAKEHOLDER MEETINGS

The primary purpose of our participation in the policy academy was to hear from stakeholders—the utilities, commercial and industrial customers, and environmental and consumer groups. Given the shifts occurring in the electricity landscape and the often widely divergent views on how to address challenges, we hoped the stakeholder process would be viewed as a “safe place” for open discussion

⁵ https://nccleantech.ncsu.edu/wp-content/uploads/GridMod_Q32017_Final.pdf

⁶ https://www.energy.gov/sites/prod/files/2018/01/f46/GMI%20Peer%20Review%20Report%202017_1-22%20FINAL%20online.pdf

⁷ <https://emp.lbl.gov/publications/future-electricity-resource-planning>

and exploration of trends, challenges, and suggestions for moving forward. The EEC conducted sector-specific stakeholder discussions during the spring and summer of 2017. At each of the sector-specific meetings, we stressed the desire to hear from the participants—our intent was not to guide the discussion toward a conclusion or resolution. The goal was to hear concerns and to gather input for further discussion. At each meeting, we reinforced the guiding principles for the group.

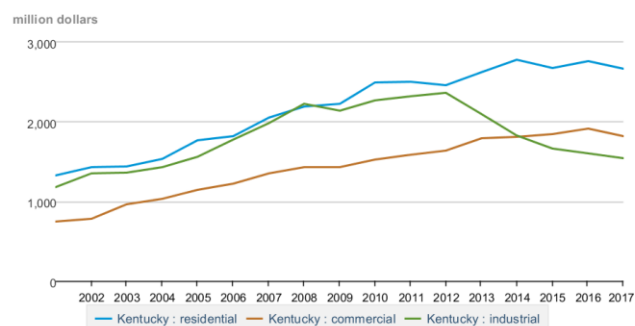
Following the sector-specific meeting, the EEC then hosted a one-day meeting on November 9, 2017, convening all of these groups to engage in open discussion about the changes occurring in the electricity sector and the potential challenges and opportunities, and a half-day meeting on February 16, 2018, to seek input on next steps. To organize the stakeholder meetings, we grouped them according to traditional electricity sectors—industrial, commercial, and residential (in rate cases, this sector is often represented by the Attorney General’s Office and/or other consumer interest as well as by environmental interests in general).

March 3, 2017, Regulated Investor Owned Utilities and the Electric Cooperatives—The purpose of this meeting was to hear their concerns and thoughts about the changing electricity landscape and suggestions for moving forward. Among the issues or concerns raised by this group were flattening load and population shifts; regulatory uncertainty and costs for compliance with regulations; need for education and awareness on how utilities operate in Kentucky; net metering; and a reluctance to alter rate-making statutes.

April 25, 2017, Industrial and Commercial Customers and Trade Groups—The discussion highlighted that Kentucky’s manufacturing sector is not homogenous. Many industrial customers have requirements for low-cost, 24-hour reliable energy to survive in a globally competitive marketplace. Any price increase could mean the closure of a facility. Many other companies have corporate sustainability goals and are pursuing access to low or zero carbon resources to power their facilities. The commercial sector stakeholders are especially concerned about annual electricity rate increases that are becoming untenable and are seeking opportunities to manage energy costs. To gather more focused input from the commercial sector, a second meeting was conducted on July 13, 2017.

May 5, 2017, Consumer Advocates and Environmental Organizations—During this discussion, concerns were expressed about potential changes to Kentucky’s net electricity metering statutes; how to implement distributed energy resource planning; and impacts of legacy costs of regulated assets and capacity markets.

Revenue from retail sales of electricity, annual



Data source: U.S. Energy Information Administration

July 13, 2017, Commercial Sector Meeting (hospitals, Retail Federation, universities, League of Cities)—As noted, entities in this sector are very concerned about rising electricity costs, which are increasing at a faster and higher rate than costs for the industrial sector. Other topics raised included potential impacts of more load loss as major companies pursue renewable or distributed energy; standby charges that are barriers to combined heat and power adoption—which can help a companies’ economic

competitiveness; and the need to drive down peak generation to avoid having to build new generation.

November 9, 2017, Large, combined stakeholder meeting—The purpose of this meeting was to convene all stakeholder interests from the previous meetings to encourage open discussion about changes occurring in the electricity sector and develop an understanding of Kentucky’s electricity landscape and the key drivers that pose challenges to utilities and their customers. Attendees included representatives from electric utilities in Kentucky (IOUs, cooperatives, TVA, and municipal utilities), industrial and commercial customers, trade associations, solar developers/installers, consultants, and environmental NGOs, academic institutions.

Following the presentation on electricity sector trends and a presentation that provided a summary of the sector-specific stakeholder meetings, participants met in smaller groups and were asked to identify the priority trends, concerns, barriers, and solutions for discussion among all stakeholders in the final session. NGA facilitated the large group discussion that followed the small breakout discussions.

Stakeholder views on trends, concerns, barriers, and solutions were not consistent (to be expected), nor was there much distinction within these categories (also not surprising). The entire list is provided at the end of this document; however, we identified the following as areas ripe for further exploration and discussion:

- Impacts of declining load—increasing costs for remaining customers
- Uncertainty about further load loss—from efficiency, from other distributed resources, including battery storage
- Poverty and impacts from loss coal production
- How to retain economic competitiveness
- Need for data
- Issues of fairness, cost-shifting
- Consumer choices—including corporate sustainability goals
- Regulatory uncertainty—federal policies unpredictable in the longer term

Feb. 16, 2018, Follow-up combined stakeholder meeting—This half-day meeting included a recap of the Nov. 9 meeting and a presentation on a draft guide to help customers access alternative energy resources in Kentucky. An open group discussion followed, in which participants were asked to share their ideas on topics that could be discussed in follow-up information sessions. These sessions would be conducted jointly by the EEC and the PSC and would cover technical issues in more depth.

Suggested Topics for Informational/Technical Sessions:

- True potential of Renewable Energy in Kentucky
- Future of energy efficiency programs—especially of utility DSM programs
- Economics of Green Tariffs—best practices; how do we develop a playbook to help the PSC

TRENDS

- Flattening demand for electricity
- Falling prices for renewable energy
- Increasing opportunities for companies and households to manage energy use.
- Electric Vehicles
- Low-cost natural gas
- Coal unit retirements nationwide
- Energy Storage

- EV charging and utility status—how might 3rd parties participate?
- Interchange of Kentucky’s involvement in PJM/MISO
- Electric competition—brought up by Marathon
- Internet of things & cybersecurity
- Energy storage
- Reliability and Resilience
- Link between FERC and states
- Metrics of corporate sustainability—how do they establish their goals?
- Future of volumetric ratemaking
- Energy 101—how does one enter the conversation when one is not the expert
- Distributed energy resources and utility long-term planning; distribution planning and microgrids
- Sustainability without subsidies versus externalities of traditional sources
- Role of energy in economic development—where does it fit into the matrix

CONCLUSION AND NEXT STEPS

Kentucky’s position in the national energy landscape is unique—we’re a coal producing state that has been hit hard by the unprecedented pace of the decline in coal production and employment; our electric utilities, with the exception of municipalities and the distribution cooperatives served by TVA, fall under the traditional regulatory model, and yet many of these regulated utilities participate in wholesale regional trading markets and are thus impacted by actions in other states; and we are a manufacturing state with energy-intensive industries that rely on low-cost, dependable electricity. Combined, these attributes make Kentucky unique. While all states have challenges as the electricity sector evolves, there are no simple solutions, especially in a state that has diverse retail electric suppliers and an economy and segments of the population that are particularly vulnerable to power sector changes.

We knew when we started this initiative that the issues were complex and that stakeholder interests would not be homogenous—they are not even homogenous within the same sector—including the industrial sector. While cost is a primary driver, companies are not in full agreement on which policies and practices are necessary to control costs. Some have expressed interest in access to wholesale markets, while others are more interested in improving efficiency or pursuing renewable power or combined heat and power to hedge against rising electricity costs. For many, renewable goals are also being driven by their investors and/or customers.

Trends addressed throughout this report will continue—growing interest in customer generation options, whether renewable or on-site through a combined heat and power system. Companies will continue to find ways to reduce energy consumption. Energy storage will grow, and combined with solar and other distributed resources, could erode electricity sales at an accelerated pace. Then there are electric vehicles, which comprise about one percent of sales today but that are predicted to increase exponentially. Will this growth help address the decline in electricity demand, or will it pose additional challenges to our utilities? How will EV growth vary regionally or between urban and rural areas?

Our diverse electricity landscape, combined with diverse stakeholder interests, makes energy policy planning more complex. Throughout this process, our role has been to foster dialogue among these diverse stakeholder interests so that there is at least a common understanding of various concerns.

Next steps:

- The complex and rapidly changing nature of electricity industry trends will require an increasing level of focus from the PSC and the Office of Energy Policy⁸. The agencies are developing plans to effectively align the Energy Office's ability to offer policy support to the PSC and in turn allow us to communicate with our varied constituent groups. As an outcome of the NGA initiative, we will be planning informational sessions with the PSC.
- The EEC has published a resource guide, *Consumer Energy Management and Access Guide* (available at energy.ky.gov), as part of the policy academy initiative. The guide presents options for those utility customers who are seeking pathways to access alternative energy through onsite or offsite electricity generation in Kentucky. As the guide points out, Kentucky's diverse utility landscape means energy consumers need to understand how to manage and control their energy consumption and that options for alternative energy might vary from utility to utility.
- As the newly created Office of Energy Policy, much of our focus over the course of the next year will be on the electricity sector. Kentucky's energy policy should be a common sense approach that helps our utilities and their customers, and the Public Service Commission, navigate this rapidly changing electricity landscape. We do not propose solutions to problems that do not exist, and we do not pretend to have all the answers to the challenges that do exist. Therefore, caution and prudence would be two key values guiding Kentucky's energy policy. Key objectives of Kentucky's energy policy are to work within the existing regulatory framework to maintain affordable rates while finding ways to be responsive to changing electricity customer expectations and needs.

⁸ The Department for Energy Development and Independence was reorganized during the 2018 legislative session into the Office of Energy Policy.

Notes from Nov. 9, 2017, Stakeholder Meeting

Trends

- Flattening of demand/losing load (4 mentions)
- Cost of fixed assets
- How to think about improving reliability (in case of natural disaster) microgrid & other options (balance between reliability & costs)
- Role of electric vehicles & impact on regions – who will be paying for infrastructure
- Excess capacity & declining demand
- Residential EE & DSM programs
- Growing desire for clean resources
- Decreased load
- Return of manufacturing into U.S./reshoring
- Cost vs. the environment (don't want cost shifting & need to keep costs low)
- Upward pressure on rates as load declines
- Corporate sustainability goals (multiple votes)
- Expanded alternative generation & loss of load
- Economic development
- Modernize the grid & rates with minimal impacts

Concerns

- Increase of energy costs
- Loss of jobs due to declining coal production
- Net metering
- How technologies get rolled out in equitable manner
- How to give consumers choices
- How to remain competitive
- Increasing costs & decreasing load
- Poverty & coal concerns
- Increasing rates impacts poverty concerns
- Impact of self-owned & operated generation onsite – excess capacity
- Variability in corporate sustainability goals (some want lowest cost vs. cleanest)
- Regulatory environment
- Utility asset age
- Need as much data as possible, but flat & declining revenues make it hard to finance AMI and other technology

Barriers

- Utility cost pressures
- How do we maintain a regulated monopoly
- Lack of consumer education – don't know how everything works
- Economics if doesn't make sense from financial strategy
- Lack of energy storage options
- Regulated state – utility service territories; double edged sword; bulky and costs passed to ratepayers
- Barriers to Economic Development—Education, tax structure, health, rural, infrastructure

- Need more information on the value of solar to grid (and other RE)
- Net metering debate on fairness
- Politics
- Historical presence of coal – barrier is visibility of other generation sources in the state
- PSC struggles to find/approve costs/fees for data collection
- Federal policies are ill defined—back and forth leads to uncertainty
- Need more information on value of RE to the grid for KY

Solutions

- Integration of renewable energy in the region
- How to move forward when new generation is less expensive than existing generation?
- Education – try to educate everyone (utilities & consumers) (multiple votes)
- Possibility of green tariff
- Avoid subsidization & mandates
- Stronger energy efficiency programs
- Right sizing asset securitization
- Different rate structures
- Economic development incentives
- Education
- Tax incentives & structure
- Being unique with special contracts and tariffs
- Communication & education – what we are and can deliver as a state regarding energy resources
- Use cost based approaches (pay as you save & other programs)
- Collaboration on economic development – what can we do as a group to support Econ. Development cabinet
- Additional clean energy tariffs – are they available or not available
- Modernizing net metering regulations

Notes from large group discussion

- On EE programs—low-hanging fruit grows back
- We tend to legislate to extreme. Conversations like this help
- Do we maintain regulatory monopoly
- How do we move forward when new generation is (costs) less than existing?
- Look at new economic model
- We can build green cheaper at utility scale—yet consumer response has not been overwhelming
- Money is being thrown at DSM—your neighbor is paying you to put in a new refrigerator
- Asset securitization—23 states. Used for stranded costs. Utilities don't earn a return; shareholder gets capital back.
- Millennials want to know what you are doing around sustainability
- Discussion on DSM programs—utilities still focus on EE, but a big difference between utility funded (i.e., ratepayer funded) versus simple outreach to encourage EE. EE is a good thing but when capacity is valued at zero, how do you do DSM—doesn't pass cost-benefit test.
- The people who need EE the most are the ones who do not have the tools to incorporate it.

- Are there limits to EE? Comment about LED—over 10 years, ½ energy than we’ve used in last 40 years? Never bet against tech innovation. May have been where someone said low-hanging fruit grows back.
- From large manufacturing entity—carbon footprint here is the worst among all facilities.
- Community solar not offered on terms that are as good as net metering
- Avoided cost of new generation (with net metering) needs to be part of the calculus
- Considerations of health/climate are outside the purview of PSC
- Reducing incentives for DR is shortsighted
- Large industrial user—Ky is in competition with states that have access to low rates—competitive factors can be taken into account by PSC
- Glut in market of NG is not a longer term trend.
- Integration of RE is difficult—think of Ca. duck curve
- How do we foster environment of working together/collaboration?
- Every stakeholder has a different view

Entities Participating in Stakeholder Discussions*

Alliance Resource Partners
Amazon
BayWare
Big Rivers
Big Rivers Electric Cooperative
Boehm, Kurtz & Lowery
BPM Lumber, LLC
Capital Link Consultants
Catholic Health Initiatives
Century Aluminum
Cypress Creek Renewables
Dinsmore
Duke Energy
East Kentucky Power Cooperative
EcoPower Generation
Frost Brown Todd, LLC
Geenex
General Motors
Glasgow Electric Plant Board
Goss Samford LLC
Harshaw-Trane
Kentuckians for the Commonwealth
Kentucky Association of Electric Cooperatives
Kentucky Chamber of Commerce
Kentucky Conservation Committee
Kentucky Forest Industries Association
Kentucky Housing Corporation
Kentucky Municipal Utilities Association
Kentucky Office of Attorney General
Kentucky Petroleum Marketers Association
Kentucky Power
Kentucky Retail Federation
Kentucky Solar Society
KPFF Consulting Engineers
Lexmark
Louisville Gas & Electric-Kentucky Utilities
Marathon Petroleum Corporation
MMLK, PLLC
Mountain Association for Community Economic Development
North American Stainless
Norton Healthcare
Schneider Electric
Solar Energy Solutions
Sturgill-Turner
Tennessee Valley Authority
Toyota Motor Manufacturing Kentucky, Inc.
U.S. Army—Ft. Knox
United Parcel Services
University of Kentucky
University of Kentucky College of Engineering
Wilderness Trace Solar

*This report was not developed with the input of stakeholders, nor does it reflect consensus on issues or suggestions for next steps.

RESOURCES

- *Distributed Energy Resources Rate Design and Compensation*, A Manual Prepared by the NARUC Staff Subcommittee on Rate Design, November 2016
- *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*. EEI
<http://www.eei.org/ourissues/finance/documents/disruptivechallenges.pdf>
- *Changing Utility Cost Pathways Amid Rising Deployment of Distributed Energy Resources*, Electric Power Research Institute, Program 174: Integration of Distributed Energy Resources
- North Carolina Clean Energy Technology Center, *The 50 States of Grid Modernization: Q4 2017 Quarterly Report, November 2017*.
- *Cost of Service Regulation in the Investor-Owned Electric Utility Industry: A History of Adaptation*, prepared by Dr. Karl McDermott, published by the Edison Electric Institute (EEI), 2012.
- *Restructuring Kentucky's Electric Utility Industry: An Assessment of and Recommendation for Future Action in Kentucky*, Final Report Special Task Force on Electricity Restructuring, Research Report 299, Sept. 2000, Legislative Research Commission
- Berkeley Lab's Future Electric Utility Regulation series, including:
 - *What will Electric Utility Regulation and Business Models Look Like in 2030?*, Andrew Satchwell, 2017
 - *Regulatory Incentives and Disincentives for Utility Investments in Grid Modernization*, Steve Kihm, Janice Beecher, and Ronal Lehr, 2017
 - *Rate Design: Trends and Perspectives*, Lisa C. Schwartz, 2106
 - *Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives*. Lisa Wood, Ross Hemphill, John Howat, Ralph Cavanagh, Severin Borenstein, Jeff Deason, and Lisa C Schwartz, 2016
 - *Performance-Based Regulation in a High Distributed Energy Resources Future, Report*, Mark Newton Lowry and Tim Woolf, January 2016