Planning for Missouri's Energy Future: the State's Approach to a Comprehensive State Energy Plan

William S. Haas, Catalina Lamadrid, Inova Energy Group

ABSTRACT

During the summer of 2014, Missouri Governor Jeremiah W. (Jay) Nixon issued an Executive Order directing the development of a Comprehensive State Energy Plan (Plan) that would chart a course toward a sustainable and prosperous energy future while creating jobs and improving Missourians' quality of life.

The state's energy office, hosted at the Missouri Department of Economic Development's Division of Energy, was tasked with leading this effort and identifying policy recommendations and opportunities to guide the state in reliably meeting future energy needs while fostering energy-related economic development. To accomplish this task, the Division of Energy engaged numerous stakeholders in a transparent process that solicited input and guidance from members of the public and energy experts. In addition, the Division of Energy examined existing energy policies, developed an inventory of present energy sources, forecasted the state's energy needs, conducted analysis, and performed benchmarking to ultimately identify policy recommendations.

This paper summarizes the approach followed by the state of Missouri to develop a Comprehensive State Energy Plan that charts a path to a sustainable and prosperous energy future for the state. Anecdotal discussions, best practices, and key lessons learned are incorporated in this paper as a roadmap for other states that may be interested in developing similar strategic plans in the near future. More broadly, this paper comments on the value of engaging a broad group of stakeholders in a collaborative and transparent process to develop a Plan that is relevant and actionable.

Introduction and Background

Missouri's Energy Profile

Located at the junction of the two largest U.S. rivers, Missouri is the 21st largest and the 18th most populous of the fifty states. Comprising 114 counties and the independent city of St. Louis, Missouri's population is estimated at 6,044,917 (United States Census Bureau 2013) and projected to increase to 6.25 million by 2025. For context and a point of reference, the Energy Information Administration (EIA) ranks Missouri as the 25th state in terms of energy consumption per capita, with total energy consumption in 2012 of 1,813 Billion BTUs and only 0.3% of the nation's energy production (EIA 2015).

In Missouri, energy supplies tend to be concentrated on coal resources with 88% of the electricity generation portfolio relying on coal as the primary fuel source. Missouri also has one nuclear power plant, Callaway Nuclear Generating Station, which, in 2013, contributed 9% of the state's net electricity generation. Additionally, transportation fuels and natural gas play an important role in terms of energy generation, and a significant amount (9%) of Missouri homes use propane as heating fuel.

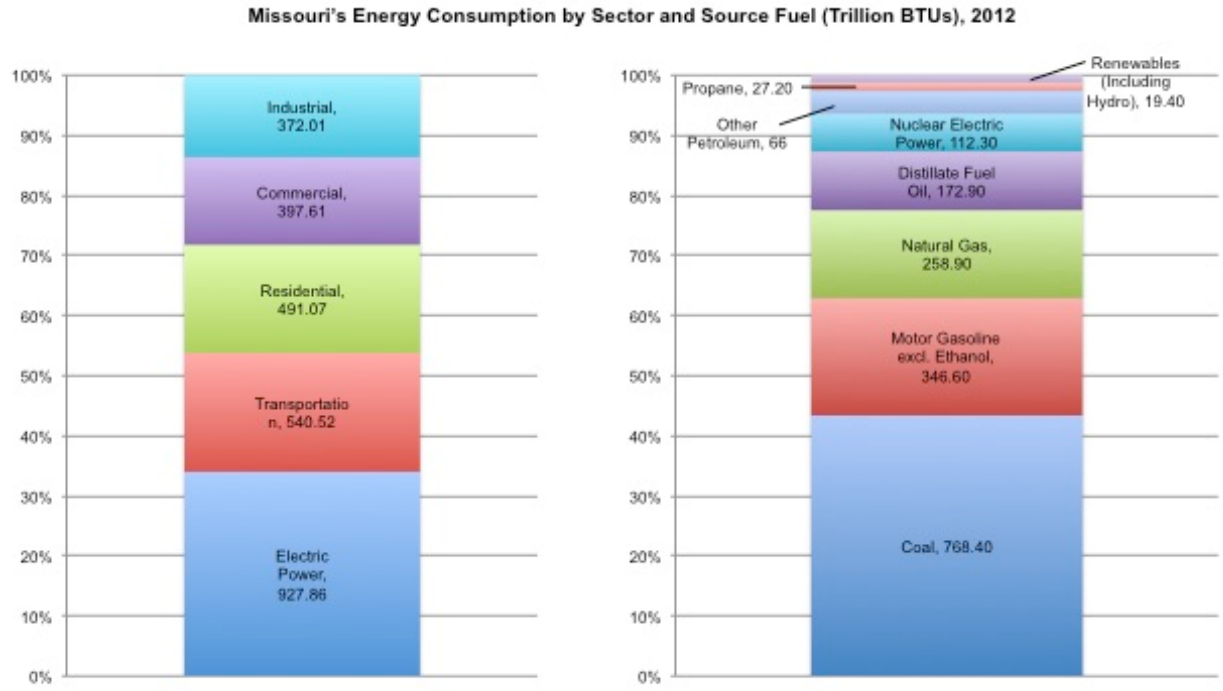

Figure 1. Missouri's Energy Consumption by Sector and Source Fuel, in Trillion BTUs. *Source*: EIA 2015.

While the state is not a net producer of energy and does not currently have significant fossil fuel producing capabilities or any refining capabilities, it does have a variety of valuable natural resources that if properly harnessed could assist in diversifying the state's energy portfolio. For instance, the state is located in the U.S. wind corridor and shares the photovoltaic resources of the American West. Forests and farmland throughout the state provide ample resources for biomass and alternative fuels, and the state contains one of the largest and most important lead deposits in the world, which can be used for production of lead-batteries.

In recent years Missouri has made significant strides in terms of energy policy. For instance, in 2009 the state passed the Missouri Energy Efficiency Investment Act (MEEIA), which established a voluntary state energy efficiency resource standard. In addition, the state has a Renewable Portfolio Standard that carves-out targets for certain technologies. Regulated state utilities are required to forecast and plan requirements for energy through an integrated resource planning process. The state government leads by example by setting energy requirements for public buildings and fleets and encouraging the use of energy savings performance contracts.

In spite of these recent successes, energy policies in Missouri tend to be conservative and cautious with goals and targets being lower than most other states in the country. Missouri, therefore, still lags behind. Perhaps most notably, Missouri is one of nine states in the country that lack building codes, and electricity and natural gas efficiency goals are entirely voluntary. In ACEEE's 2014 State Energy Efficiency Scorecard, Missouri was ranked as number 44 in the nation in terms of policy and program efforts related to energy efficiency (Gilleo et al. 2014).

The Executive Order and Origins of the Plan

In June of 2014 Governor Nixon signed Executive Order 14-06 (Order) which directed the Missouri Department of Economic Development's Division of Energy to lead the

development of a Comprehensive State Energy Plan (Plan) for Missouri that would chart a course toward a sustainable and prosperous energy future while creating jobs and improving quality of life. The Order required that the Plan be developed with comprehensive stakeholder input and that a final version be submitted to the Governor's Office by the end of May 2015.

Per the Order, the Plan had to include analyses and recommendations to guide the state of Missouri in reliably meeting future energy needs while fostering energy-related economic development. In addition, policies to meet Missouri's short-term and long-term needs for clean, reliable, affordable, and abundant energy were to be proposed and changes to statutes and regulations necessary for implementation were to be identified.

Prior to this effort, the most recent energy plan for the state was the Missouri Statewide Energy Study published in May 1992 by the Environmental Improvement and Energy Resources Authority. Since 1992, there have been a number of studies and commissions that produced reports and recommendations, but none of them are comprehensive enough to cover the intended scope of the 2015 Plan: electric generation, fuels and resource extraction, energy distribution, energy usage, energy storage, energy-related land use, energy/water nexus, energy pricing and rate-setting processes, energy security and assurance, and energy resources in emergencies.

The Plan Development Process

To develop Missouri's comprehensive state energy plan, the Division of Energy held a competitive procurement process and contracted Inova Energy Group, a management consulting firm with expertise in the energy industry and policy development. The team in charge of leading the plan development effort had participated in similar efforts in other states and followed recommendations developed by the National Association of State Energy Officials (NASEO) in their State Energy Planning Guidelines (NASEO 2013). Generally speaking, the Plan development process included the activities identified in Figure 2. These activities are highly interconnected and, therefore, most of the tasks occurred in parallel. To ensure adequate information was being considered and sufficient input incorporated, iterative stakeholder input occurred throughout the process.

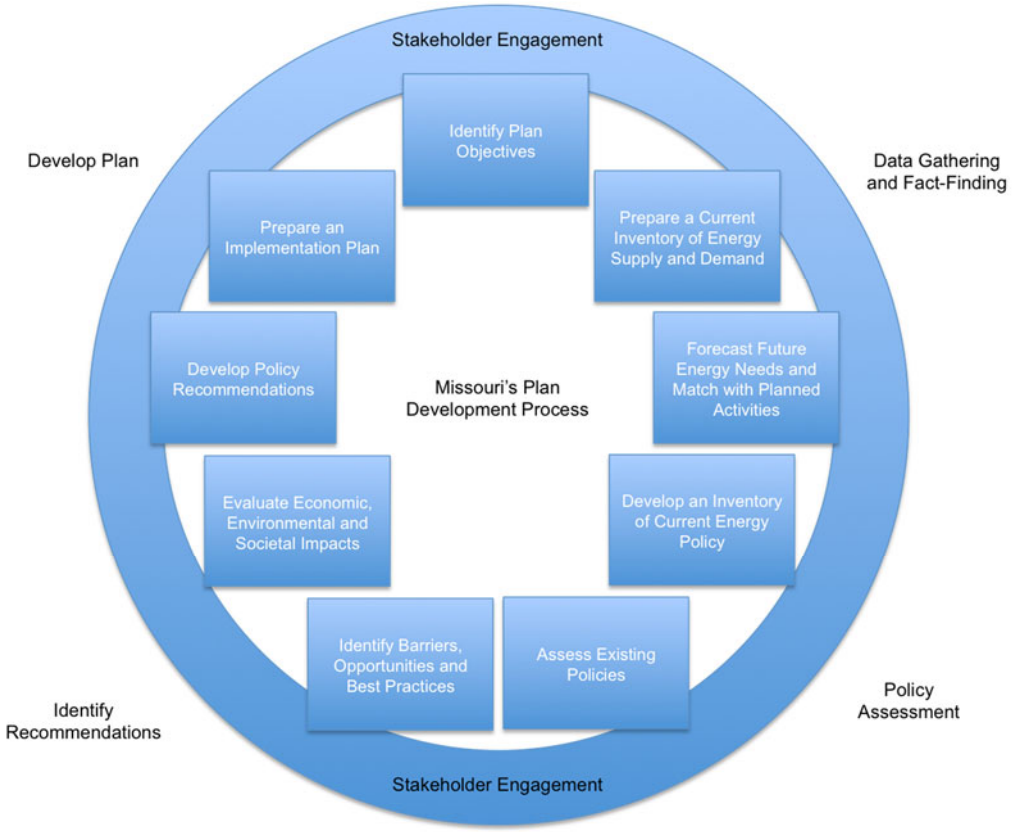

Figure 2. Missouri's Approach to Development of the State's Comprehensive Energy Plan.

Stakeholder Engagement

The development process of Missouri's comprehensive energy plan allowed active participation from the public and representatives of interested stakeholders. To best facilitate this participation, significant effort went into making the process as transparent as possible and allowing for two-way communications and input. The extensive involvement of individuals was particularly critical given the complex nature of energy systems and the many interactions that exist between natural resources, generation and usage, and Missouri's economy. Stakeholder input, highly prioritized by the Missouri government, occurred in various forms throughout the entire Plan development process.

Stakeholder engagement began in October 2014 with a series of seven public meetings held across the state by the Division of Energy. The purpose of these meetings, which were attended by approximately 360 individuals, was to inform the public about the Plan development process and encourage public thoughts, comments, and opinions around Missouri's energy future and considerations for the Plan. Input was also solicited from Missouri residents via an online forum hosted at the Division of Energy's website (energy.mo.gov).

In addition to public forums, a Steering Committee was formed with over 50 leaders in business, labor, education, and energy that were invited to participate in helping to guide the development of the Plan. The members of the Steering Committee were selected because each had expertise in a certain aspect of Missouri's energy landscape and represented a certain constituency that had an interest in Missouri's energy future. In addition to participating in the public meetings, Steering Committee members were encouraged to participate in Working

Groups and were asked to provide overall review and comments to support the Division of Energy in the finalization of the Plan.

Perhaps the most significant stakeholder involvement came from participation in the Working Groups, whose membership included Steering Committee members, staff from several Missouri agencies, business leaders, energy innovators, academics, and other members of the public. The Working Groups comprised over 200 individuals who volunteered to participate and were thoroughly engaged throughout the Plan development process through conference calls and one-on-one communications. Working Groups were divided into six different topic areas with individuals self-selecting groups in which to participate:

- Electricity Generation, Fuels and Resource Extraction
- Energy Distribution and Storage
- Energy Usage
- Energy and the Environment (Air, Land and Water)
- Energy Pricing and Rate-setting Processes
- Energy Security, Assurance, and Resources in Emergencies

Working Groups operated under the principles of transparency and openness. The engagement process lasted five months from formation of the groups and introduction of responsibilities to review of a first Plan draft. Working Group members were asked to contribute ideas and information to the Plan development team by identifying areas of opportunity for policy improvement, best practices from other states, success stories from Missouri-specific projects, potential challenges and interactions between policy areas, and information and data on Missouri energy topics. In order for the information to be beneficial to the Plan, it was important to recognize different points of view and perspectives. It was thus critical to establish adequate mechanisms to allow for productive interactions and discussions.

Most of the Working Group discussions occurred via several conference calls that were scheduled in advance and facilitated by a moderator to distribute time equitably across all participants and ensure a variety of topics were covered. Each conference call had a pre-established objective that varied from gathering input on policies that should be explored, to providing feedback on an outline for the plan and requesting examples of papers, benchmark documents and others sources of information. Discussions during the conference calls were productive, and though points of view differed due to the variety of interests represented, the diversity of perspectives enhanced the process rather than obstructing it.

In addition to the conference calls, a collaborative online platform was setup for all Working Group members to upload documents and information and, most importantly, to participate in online discussions. The collaborative platform was particularly helpful in serving as a repository of information and allowing on-going discussions outside of the time allocated for the general meetings. It also served as a mechanism for distributing materials on a timely basis to all members of the project.

Inventory of Supply and Demand

Before beginning to make policy recommendations for a state, it is important to understand the general landscape of energy resources as well as the state's future energy needs based on projections of population, energy demand, supply, price, and economic growth. To do

this, the Plan development team first conducted an inventory and assessment of Missouri's current energy supply (generation) and demand (usage). Using this information, the team developed a description of both the state's energy provider industry and how and where energy is used by Missourians.

The exercise of putting together the demand and supply inventory proved time intensive, particularly given the comprehensive scope of the inventory and information existence and accessibility issues. In terms of comprehensiveness, it was critical that the inventory covered every aspect of the energy system including generation technologies, fuel sources, availability of natural resources, transmission and distribution systems, storage capacity, consumption trends, and pricing information. To compile all of this information, the team leveraged relationships with state agencies and others who facilitated access to raw data and publications and provided their expert input on what was critical to include in the inventory.

An objective in developing the state's energy profile was to use Missouri-specific figures and information as well as the most recently available publications, so that the analysis conducted would be relevant and timely. Given the wealth of sources available both on and offline, the team had to consider trade-offs between credibility and impartialness of a data source against the granularity and comprehensiveness of the information and the year of publication. This, however, proved particularly challenging given natural delays that take place in data-gathering and validating processes, i.e., most data available at the time the Plan was being developed was either current and scattered through different sources, or outdated but combined in a single database. Ultimately decisions were made as to which databases would primarily be used and how the data should be referenced and clarified at the time of incorporation into the Plan. Some sources that proved valuable in conducting the analysis included:

- EIA State Energy Database System, Annual Energy Outlook Report and the Short Term Energy Outlook;
- U.S. Census;
- U.S. Department of Energy and different National Energy Laboratories;
- Missouri Department of Natural Resources;
- Missouri Department of Transportation;
- Missouri Department of Economic Development;
- Missouri Public Utility Commission dockets; and
- Publications by Missouri utilities including Integrated Resource Plans.

Compiling an inventory of current energy sources was only the first step in a longer process. Just as critical as it was to understand where Missouri was at present, it was also important to understand the stresses and demands that population and economic growth would place on the state's energy systems and whether or not the existing infrastructure would be able to support these changes. Furthermore, from a planning standpoint, it was important to review planned or projected capacity additions or retirements to the state's generating units and distribution systems. Finally, considerations such as trends in technology development and efficiency improvements, growth of urban and suburban areas, and the impact of federal legislation needed to be considered.

To forecast all of these items, the plan development team began by reviewing the most recent Integrated Resource Plans of the state's regulated electric utilities, which have a planning horizon of 20 years and detail planned supply changes of conventional as well as renewable sources and projected energy efficiency gains. Similar documents available for the state's natural

gas and non-regulated utilities and the team included these documents in their review. In addition, the team looked at pending federal legislation, and analyzed assumptions and forecasts at the national level from EIA's 2014 Annual Energy Outlook (AEO). The AEO includes forecasts of energy consumption, production and prices at the national level. Although the forecasts in the AEO are not entirely applicable to Missouri, they provide an insight into future national dynamics resulting from market prices, supply and demand forces, and the impact of market transformation and national legislative actions.

Energy Policy Inventory and Assessment

Another directive of the Executive Order was to analyze existing policies that impact the energy industry in Missouri and recommend policy changes that would allow for a reliable, affordable and clean energy future. The Plan development team prepared a policy inventory at the state level that included policies such as Missouri's integrated resource planning process, policies related to smart grid installation, land use and permitting practices, solar/wind access policies, financing, tax credits, and ratemaking procedures.

The policy inventory was complemented by an assessment that summarized the intended goals of 55 existing energy policies and any identified unintended barriers to creating economic growth and improved quality of life. The term "quality of life, though not defined by the Executive Order, was used as shorthand for a set of values that includes a healthy and growing economy, a healthy environment, and resilience to economic shocks, natural disasters, and other potential hardships.

The policy assessment included a summary of best practices related to energy generation and use, which were drawn from industry experts and leading states. The best practices summary was designed to guide the Division of Energy and the plan development team in formulating the Comprehensive State Energy Plan's policy recommendations.

In parallel with this policy assessment process, Working Group members were asked to provide recommendations, based on their expertise and experience, as to which existing policies should be modified for Missouri and what new policies should be recommended. Of particular interest was drawing on Working Group member's resources and knowledge to identify interactions between groups of policies, applicability to Missouri, and potential barriers and challenges.

Policies recommended by Working Group members were reviewed and analyzed, first from a standpoint of feasibility and then in terms of the Plan's stated goals. Once evaluated, recommended policies were classified into tiers and incorporated into the Plan in a prioritized manner. The criteria that were used to evaluate proposed policy modifications or new policies included the following:

- Timeframe for implementation;
- Financial, technical, political and legal feasibility;
- Scope of policy benefits including environmental, economic, and societal; and
- Relevance to Missouri's existing energy industry, infrastructure and resources.

The Outcome

Completion of Missouri's Comprehensive State Energy Plan is anticipated in May 2015 and the Plan will recommended overall strategies and specific tactics that the state can undertake

to ensure a reliable, affordable and clean energy future. The document itself was developed with the public in mind: it is written so that every Missourian can pick up the Plan and understand the state's current profile and potential future, including where the state could go if the policies recommended are implemented.

The crux of a strong energy plan, one that helps to move policy and economic development forward, is its ability to mobilize people by establishing inspiring goals rooted in an accurate depiction of existing conditions and potential opportunities. To have this mobilizing effect, it is crucial that goals are designed to connect to coherent, implementable actions. Missouri's Plan development process was focused on ensuring that the plan was implementable, and that any recommendations were grounded in attainable, relevant and action-oriented results. Ultimately, policy recommendations were designed to move the state forward in using energy responsibly and efficiently, while not conflicting with other state plans and policies. Included within the Plan are recommendations for next steps and an implementation timeline, as well as suggestions for check-points and recurring revisions to the Plan itself.

To ensure that the public became aware of the Plan and that support and understanding was built, the Division of Energy conducted outreach in the form of press releases and website announcements, making in-person public presentations to stakeholders as well as web-based presentations. In addition, various formats of executive summaries, factsheets and quick talking points are being developed to accommodate widespread dissemination and encourage Missourians to read the document.

As a means of summarizing the Plan development process, the section below highlights the most critical and practical lessons learned. Most of these lessons learned are focused on the value of having significant and meaningful stakeholder engagement that serves as a platform for developing a comprehensive energy plan grounded on facts and local knowledge.

Lessons Learned

Perhaps the most critical lesson learned during the development of Missouri's Comprehensive State Energy Plan is the need to accurately evaluate the resources available to undertake an effort such as this one. If a comprehensive analysis is desired, then sufficient time needs to be allocated to the effort. Stakeholder engagement, in particular, requires proper planning to give time to participants to review information and provide input. With large engagements, sufficient notice needs to be provided and roles and responsibilities need to be agreed upon early so that the process can be as efficient as possible. Missouri allocated eight months to the development of their Plan and more time would have been beneficial.

Another interesting realization that came from Missouri's stakeholder engagement process is the need to identify the points in time when engagement is valuable and the specific objectives of the engagement. For instance, if engaged early in the process, stakeholders can provide direction and high-level thoughts and perspectives, but if engaged at a later time, stakeholders can provide more detailed and specific feedback that might be more valuable. Stakeholder interests also need to be considered: some stakeholders will want to be engaged at the beginning to chart the course for the Plan, while others are more interested in reviewing the written document and proposed policies. Most likely, it will be a combination of both.

When planning the stakeholder engagement process it is recommended that states identify upfront their specific needs and reasons for engaging stakeholders at various points of the process. While transparency and inclusiveness is recommended and highly beneficial to the process, large stakeholder groups can become unproductive if sufficient resources and

management efforts are not allocated. Striking a balance is key. As a suggestion, states can develop Stakeholder Registries early in the process, i.e., matrices that identify the names and affiliations of each stakeholder, their areas of interests, and their influence levels. This Registry can help classify stakeholders to ensure variety, and also ensure that there are no gaps in the expertise involved.

In terms of the Plan itself, it is important that the plan be grounded on data and reliable information. States should do background research and, ideally, identify early which sources of information are going to be leveraged and how deep the analysis should be. This exercise is important because database attributes and limitations need to be recognized. While the Energy Information Administration has the most comprehensive sets of data, state-owned databases often have more current information. This is due to the inherent timeline associated with compiling, cleaning, validating and publishing data.

As a final recommendation, stakeholders involved in the process should always keep in mind the importance of having a Plan that is implementable and how to make that happen. While Missouri's Plan was only completed at the time this paper was developed and the state has not moved forward with implementation, the state does recognize the need to have a champion, toolkits, and materials that can take the Plan from a document to a reality.

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