1. Executive Summary

Highlights

- *Ameren Missouri has developed and is executing on a plan that is focused on transitioning its generation fleet to a cleaner and more fuel diverse portfolio in a responsible fashion over the next 20 years to ensure we provide service to our customers that is safe, reliable and environmentally responsible at a reasonable cost.*
- *Our plan includes continued customer energy efficiency program offerings, retirement of approximately one-third of our coal-fired generating capacity, which will be reaching the end of its useful life, and expansion of renewable and cleaner-burning natural gas-fired generation.*
- *Our plan allows us to continue to rely on our existing, low-cost and carbon-free nuclear generation while also preserving options for future nuclear generation.*
- *By 2035, our plan would result in a diverse, balanced and dependable mix of coal, nuclear, natural gas and renewable energy resources that results in further significant reductions in emissions of carbon dioxide, sulfur dioxide, nitrogen oxides, mercury and particulate matter in addition to those we have achieved since 1990.*
- *Our plan allows us to achieve the goals of the U.S. EPA's proposed Clean Power Plan, reducing carbon dioxide emissions by 30% from 2005 levels, but at a customer cost savings of $4 billion.*

Every three years, Ameren Missouri files with the Missouri Public Service Commission its Integrated Resource Plan (IRP). The IRP provides an assessment of the future electric energy needs of our customers for the coming 20 years and our preferred plan for meeting those needs. Ameren Missouri's 2014 IRP presents a resource plan that is focused on transitioning our generation fleet to a cleaner and more fuel diverse portfolio in a responsible fashion. Our plan includes continued customer energy efficiency program offerings, retirement of approximately one-third of our coal-fired generating capacity, which will be reaching the end of its useful life, and expansion of renewable and cleaner-burning natural gas-fired generation. By executing our plan, we will ensure that our customers' long-term electric energy needs are met in a safe, reliable, cost-effective and environmentally responsible manner.

1.1 Transitioning to a More Fuel Diverse Portfolio

The conditions and circumstances in which utilities must make decisions about how to meet customers' future electric energy needs are ever-changing. Decisions are influenced by the costs and availability of different resource alternatives and by conditions in electric energy markets, including changes in environmental regulations, commodity prices, technology advancements, financial markets, and the economy at large. Economic growth has slowed in recent years, and future demand will continue to grow at a slower pace due in large part to increases in energy efficiency. As a result, the need for new sources of generation is being influenced more by the need to replace existing sources of generation as they reach the end of their useful lives and less by the need to serve growing demand.

Ameren Missouri produces over 70% of the electricity it generates from efficient, low-cost coal. These coal-fired generators must be retired when they reach the end of their useful lives. Retirement decisions are driven in large part by expectations for environmental regulation, in addition to coal prices and power prices. In recent years we have seen an increase in the number and complexity of new environmental regulations primarily affecting coal-fired power plants. Most recently, the EPA has proposed regulations on the emission of carbon dioxide (CO_2) from existing fossil-fueled generators. At the same time, we have seen a sustained reduction in the price for natural gas resulting from the continued shale gas boom and a corresponding reduction in wholesale prices for electricity. Environmental regulations and low natural gas prices have challenged the economics of older, less-efficient coal generators. This is not to say that coal-fired power is not economic – far from it. Ameren Missouri's more efficient coal-fired generators are among the most efficient and economic in the country. It simply means that we must be mindful of the challenges and ensure that we balance all the costs and benefits of coal generation.

To ensure that we are able to meet customers' long-term energy needs and to address the challenges of our aging fleet of coal-fired generators, Ameren Missouri has developed and is executing on a plan that is designed to satisfy the following objectives:

- ✓ **Transition Ameren Missouri's resource mix to a cleaner, more fuel diverse portfolio in a responsible fashion over the next 20 years**
- ✓ **Manage the transition of our generation fleet, and plan for eventual closure of aging coal-fired resources at the end of their useful lives, in a way that is beneficial to customers, shareholders, the environment, and our communities**
- ✓ **Create and maintain flexibility – financial, economic, technological, regulatory, environmental, etc. – to be able to effectively adapt to changing conditions**

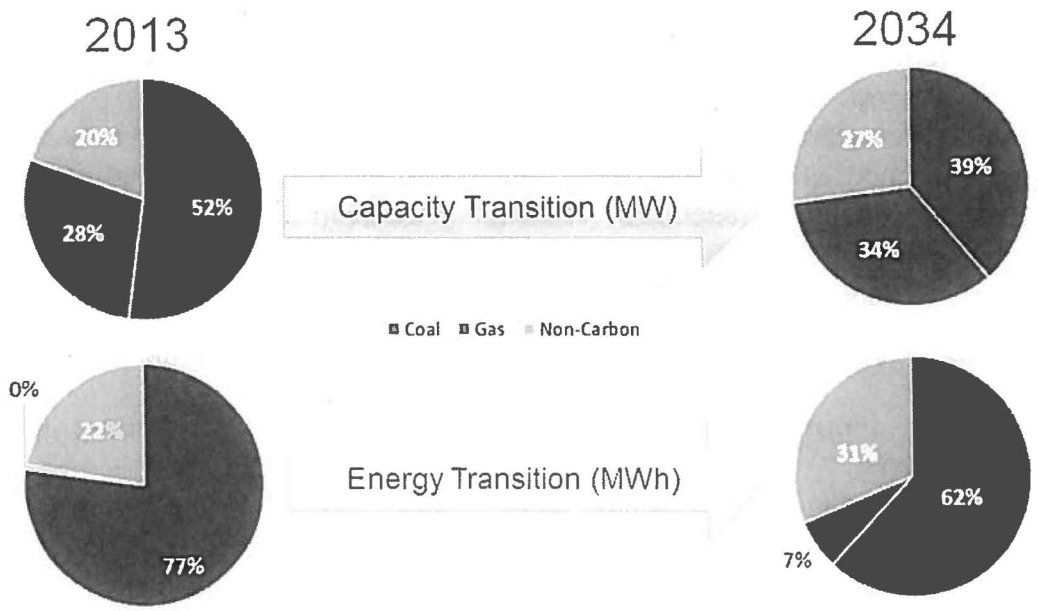
In addition to addressing the challenges of our aging coal-fired fleet, and to fully satisfy our planning objectives, we must also focus on adding new cleaner sources of electric generation that enhance the fuel diversity of our portfolio and reduce emissions. The addition of renewable generation sources such as wind, solar, hydro and biomass can help us to enhance our fuel diversity and also meet the requirements of Missouri's Renewable Energy Standard (RES). Adding natural gas-fired generation will also allow us to enhance our fuel diversity while providing cost-effective replacement capacity for certain retiring coal-fired resources. Nuclear generation is another viable resource option that can be used to replace retiring coal-fired resources while adding no emissions of greenhouse gases and other emissions.

Our preferred resource plan satisfies the planning objectives outlined above by:

- ✓ **Retiring approximately one-third of our coal-fired generating capacity (1,808 MW)**
  - Meramec Energy Center units 1 and 2 converted to natural gas-fired operation in early 2016; all four units retired by the end of 2022
  - Sioux Energy Center retired by the end of 2033
- ✓ **Significantly expanding our portfolio of renewable generation with the addition of:**
  - 400 MW of wind generation
  - 45 MW of solar generation
  - 28 MW of hydroelectric generation
  - 5 MW of landfill gas generation
- ✓ **Continuing to offer cost-effective customer energy efficiency programs**
- ✓ **Adding cost-effective demand response programs**
- ✓ **Adding 600 MW of efficient natural gas-fired combined cycle generation**
- ✓ **Continuing to rely on our existing low-cost nuclear generation**
- ✓ **Preserving options for new nuclear generation**

Figure 1.1 illustrates the impact of our preferred resource plan on our portfolio mix over the next 20 years. Non-carbon generation includes nuclear, renewable and storage resources. As the graphic shows, our portfolio will be transitioned to one that is more fuel diverse and balanced in terms of both capacity (MW) and energy (MWh). As a result of this transition, our plan will also result in a significant reduction of carbon dioxide emissions, allowing us to achieve CO_2 emissions that are 30% below 2005 levels.

Figure 1.1 Preferred Resource Plan Portfolio Transition

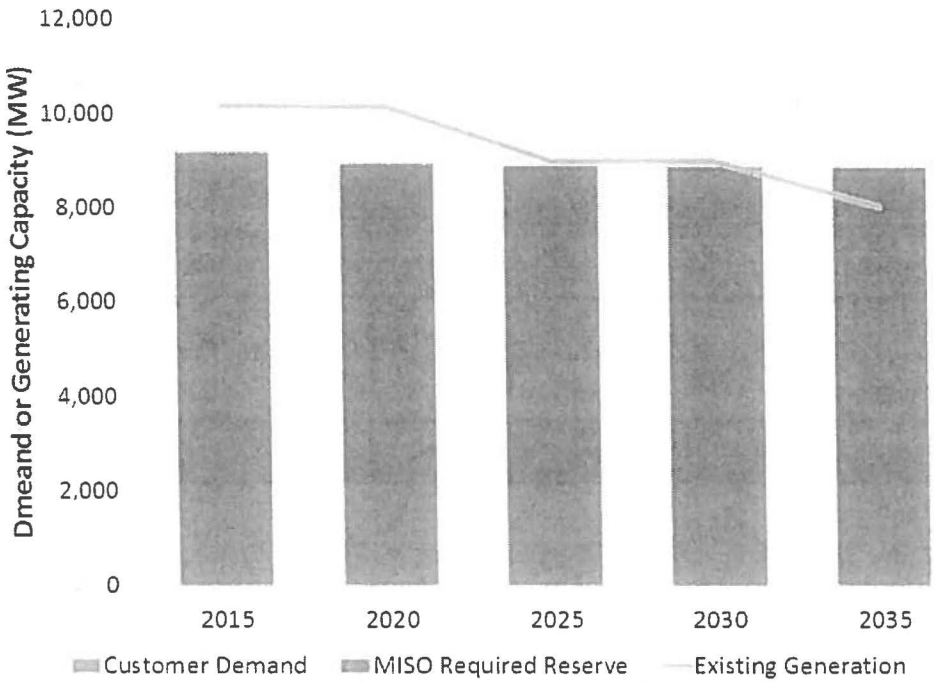


Note: Capacity percentages based on nameplate generation ratings. Non-carbon generation includes nuclear

1.2 Our Need for New Generating Resources

Ameren Missouri currently has sufficient resources to meet our customers' demand and provide sufficient reserve capacity to ensure reliability of electric generation and support sales into the Midcontinent Independent System Operator (MISO) market. With a slow recovery from the Great Recession and with increasing levels of energy efficiency, growth in demand for electricity has diminished compared to previous historical levels. Figure 1.2 shows our expected customer demand, including customer energy efficiency programs, and reserve requirements and our existing net generating capability available to meet them, including planned retirements. With little or no growth in demand, our need for new sources of generation will be driven primarily by 1) renewable energy needed to comply with the RES and 2) replacement of retired generation when appropriate.

Figure 1.2 Customer Demand, Reserve and Generation



Note: Does not include addition of new generation sources

Ameren Missouri produces over 70% of the electricity it generates from coal. Ameren Missouri's existing fleet of coal-fired generating units are all between 37 and 61 years old, as shown in Table 1.1. Through diligent maintenance and cost-effective equipment replacement we have been able to maintain the efficiency and production capability of our low-cost coal-fired energy centers while also maintaining high standards of safety and reliability. Eventually though, such coal-fired units will be retired and, if necessary, replaced at the end of their useful lives. Retirement of our Meramec Energy Center can be carried out without creating a need for new generating capacity, primarily as a result of the continuation of our cost-effective customer energy efficiency programs. However, retirement of additional coal generation beyond Meramec is expected to result in a need for new generation. As Table 1.1 shows, we expect to retire our Sioux Energy Center by the end of 2033. Upon the retirement of Sioux we expect to need to add new generating capacity to meet customer demand and MISO reserve margin requirements for reliability.

Table 1.1 Ameren Missouri Coal Fleet Profile

Energy Center	Units	Capacity (MW)	In-Service Year	Age (years)	Estimated Retirement	Age at Retirement
Labadie	4	2,374	1970-73	41-44	2042	65-70
Rush Island	2	1,182	1976-77	37-38	2046	69-70
Sioux	2	972	1967-68	46-47	2033	65-66
Meramec	4	831	1953-61	53-61	2022	61-69
All Coal Energy Centers	12	5,359	1953-77	37-61		61-70

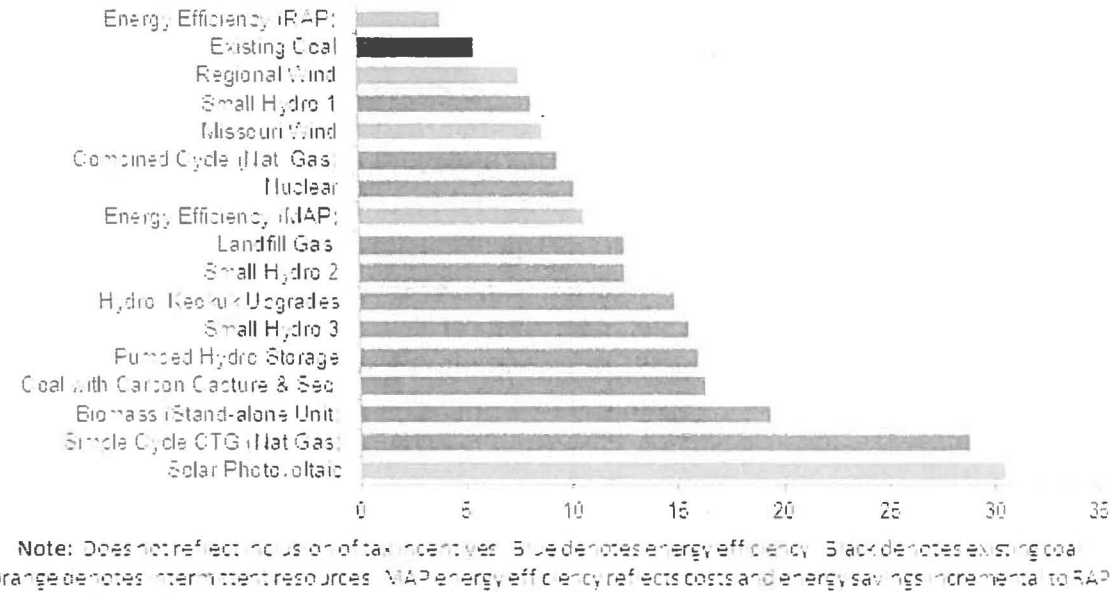
We also have a need for renewable resources during the planning horizon to meet the requirements of Missouri's RES. The RES requires increasing amounts of energy from renewable sources subject to a 1% rate impact limitation. The requirements for renewable energy increase from 5% of retail sales to 10% in 2018 and then to 15% in 2021. Of those renewable energy amounts, at least 2% must come from solar energy resources. To date, Ameren Missouri has been able to rely primarily on renewable energy produced by our Keokuk hydroelectric facility, our purchased power agreement with Horizon's Pioneer Prairie II wind farm, our landfill gas-powered Maryland Heights Renewable Energy Center, and solar energy produced by customer-owned systems and solar panels on our St. Louis General Office Building. However, when the standard requirement increases to 10% in 2018, and to 15% in 2021, we will need additional renewable energy resources to meet it. Ameren Missouri is already taking steps toward meeting our needs for additional solar energy resources with the construction of our 5 MW O'Fallon Renewable Energy Center (OREC) in O'Fallon, Missouri. Greater amounts of renewable energy will be added to our portfolio from additional solar and other renewable sources, such as wind, hydro and biomass, to meet our longer-term needs. We continue to work to identify and evaluate opportunities for expansion of renewable energy resources.

1.3 Resource Options for Meeting Our Needs

There are a number of options available for meeting our customers' future resource needs. These include so-called demand-side resources such as customer energy efficiency programs that can be used to reduce the amount of energy needed to provide

the same level of service, convenience and comfort. They also include new generating resources such as renewable, natural gas, or nuclear powered generation. We have taken a fresh look at these and many other options for meeting customers' future needs.

Figure 1.3 LCOE for Resource Options (cents/kWh)



Note: Does not reflect inclusion of tax incentives. Blue denotes energy efficiency. Black denotes existing coal. Orange denotes intermittent resources. MAP energy efficiency reflects costs and energy savings incremental to RAP.

One way to compare these different resource options is to look at the levelized cost of energy for each option. The levelized cost of energy, or LCOE, is a measure of the per-unit cost of energy produced by a resource over its expected useful life expressed in cents per kilowatt-hour (cents/kWh). It includes all of the costs of construction and ownership, such as the recovery of the capital investment and a fair return for investors, and all of the costs of operations, such as the people, fuel, and other resources needed to operate and maintain the facilities in a safe and reliable manner. Figure 1.3 shows a comparison of the LCOE for some of the most promising resource options. It also includes the LCOE for our existing coal-fired resources. As the graphic shows, the more cost-effective resources include energy efficiency, natural gas-fired combined cycle turbines, nuclear, and renewables such as wind, hydro and landfill gas. It also shows that our existing coal generators remain low-cost sources of energy for meeting our customers' needs for the duration of the generators' expected useful lives.

It is important to recognize that while the LCOE provides a useful measure of the cost of energy from various resource options, it is not the only factor that must be considered in making resource decisions. The additional advantages of resources that can provide generation on demand and with short notice, such as simple cycle combustion turbine

generators (CTGs) or hydroelectric generators are not accounted for by the LCOE. Nor is the intermittent nature of some renewable resources, such as wind and solar, which can make the energy output of these resources unpredictable. Risk and uncertainty surrounding future environmental regulations, commodity market prices, economic conditions, economic development opportunities, and other factors must be considered as well. Our analysis has shown that a few resource options provide distinct advantages compared to others.

Energy Efficiency – The cost of saving a kWh of energy is generally cheaper than the cost of generating a kWh of energy from a new resource. Figure 1.3 shows that pursuing programs at a level we call realistic achievable potential (RAP) can produce just such a result. Ameren Missouri has found, through its robust market research and actual experience to date, that customer energy efficiency programs are a cost-effective way to reduce our need for new sources of generation while producing meaningful savings for customers who participate. However, unlike a new power plant, the success of energy efficiency programs is highly dependent on the specific choices made by each and every one of our 1.2 million customers. Its success is also dependent on the need for continued constructive regulation. We must therefore proceed thoughtfully with our customer energy efficiency programs to ensure that they achieve the desired results in a cost-effective manner while looking for ways to identify improvement opportunities and maximize the amount of cost-effective energy savings we can achieve.

Wind Power – Wind power continues to be an attractive resource option, not only for meeting requirements of the RES, but also as a low-cost source of large amounts of emission-free generation. Ameren Missouri has identified a number of areas within MISO that are conducive to cost-effective wind power, including areas in the state of Missouri. The key disadvantage of wind is its intermittent nature – it only generates when the wind is blowing. As a result, it cannot be relied upon significantly for generating power at times of peak demand. MISO allows utilities to count approximately 14% of the output capability of wind to meet peak demand requirements for reliability. Even so, wind can provide large volumes of lower-cost energy that can help to replace energy production lost from the retirement of coal resources.

Natural Gas Combined Cycle – With the continued prospects for relatively inexpensive supplies of natural gas, combined cycle gas combustion turbines are an attractive option for new generation. Unlike CTGs, which generate electricity only from burning natural gas, combined cycle generators capture the waste heat from gas combustion and use it to generate additional electricity from steam. As a result, combined cycle generators can achieve operating efficiencies that are significantly higher than those of coal generators and largely offset the higher cost of natural gas fuel compared to coal.

The potential disadvantage of gas-fired generation is fuel price volatility. Natural gas has historically been subject to large and sudden price changes. When considering a natural gas-fired resource, it is important to consider the appropriate amount of exposure to such price fluctuations and the sufficiency of natural gas delivery infrastructure.

Nuclear Power – Nuclear power is capable of providing around-the-clock generation on a continuous basis at a competitive cost. Because a high percentage of the costs of nuclear generation are fixed, it is not as vulnerable to changes in fuel or other variable costs. At the same time, new nuclear generation requires large amounts of capital investment, so it is important to manage the associated financing risks. For Ameren Missouri, nuclear power continues to represent an important option to be maintained as we consider the implications of greenhouse gas regulations and as we look to the longer-term transition of our generation portfolio, as well as the associated economic development opportunities for Missouri

Solar – Investments in new solar generation by Ameren Missouri allow us to bring the benefits of solar energy to all of our customers at an overall cost that is lower than that for individual customer installations. Our O'Fallon Renewable Energy Center project is expected to be completed by the end of 2014 and represents the first of several such projects to provide clean solar energy to our customers. Ameren Missouri is planning another new, and larger, solar energy project to be completed in 2016. When completed, it would become the largest solar energy facility in Missouri, approximately 10 MW.

Other Renewable Resources – While wind power is promising as a lower-cost source of large volumes of emission-free generation, Ameren Missouri is also encouraged by the potential of other sources of renewable energy. The performance of our Maryland Heights Renewable Energy Center landfill gas generating facility demonstrates the viability of a cost-competitive option for around-the-clock renewable generation with the potential for expansion. In the longer term, small hydroelectric projects may provide cost-competitive opportunities for additional renewable energy. Ameren Missouri continues to evaluate the potential and viability for a range of renewable energy sources.

With our strategy to transition our resource portfolio to one that is cleaner and more fuel diverse, it is important that we do so in a responsible fashion and fully consider the benefits that each of these options provides, while balancing and managing the ever-changing energy and economic environment in which we operate.

1.4 Planning Assumptions

To help us determine the appropriate resource balance and path toward a cleaner and more fuel diverse resource portfolio, we evaluate the options described above using robust ranges for key assumptions that can influence our resource decisions. We have found that there are certain key assumptions that can influence our resource decisions:

- *Natural Gas Prices*
- *Load Growth*
- *Environmental Regulations*
- *Coal Prices*
- *Generation Project Costs*
- *Cost of Capital (Debt and Equity)*
- *Cost and Performance of Demand-side Resources*

Natural Gas Prices

The price of natural gas is important not only in assessing the economics of gas-fired resources but also in identifying the range of wholesale electricity prices affecting the economics of all resources. This is because wholesale electricity prices are determined in large part by the price of natural gas. Based on an assessment of the natural gas markets by our internal experts, we assume that long-term natural gas prices will be in the range of $4/MMBtu to $6/MMBtu in today's dollars.

Load Growth

Load growth in the U.S. Eastern Interconnect also affects wholesale prices for electricity – the higher the load growth, the higher the wholesale price of electricity. In addition to factors relating to economic growth and expectations for the level of energy intensity in the economy, we also must assess other factors that could influence the growth of electricity demand such as utility energy efficiency programs and the potential for technological and market advancements in areas such as electric vehicles and distributed generation. Taking into account all these factors, we estimate that load growth in the Eastern Interconnect will be approximately 0.6 percent annually, with reasonable probabilities that it could be higher or lower.

Environmental Regulations

Stricter environmental regulations impact the supply of generation available to serve load, primarily by influencing decisions to convert or retire existing coal-fired generators. This includes regulations affecting air emissions, water use, and waste disposal as well as regulation of greenhouse gases such as carbon dioxide, which is the focus of the U.S. Environmental Protection Agency's (EPA's) recently proposed Clean Power Plan.

The more coal-fired generation that is converted or retired, the more other sources of generation, including natural gas, affect the wholesale price of electricity. Based on the assessment of current and future environmental regulations by our internal experts, we have assumed coal generator retirements of 50-70 GW by 2020 and 80-120 GW by 2030. We have also assumed that there is an explicit price on carbon dioxide emissions under the scenario with the highest level of retirements. The price range we have assumed is between $23/ton and $53/ton starting in 2025. This range is based on research by Synapse Energy Economics, which annually publishes forecasts of carbon prices used in utility planning analysis. It should be noted that the actual cost of complying with greenhouse gas regulations can be higher depending on the specifics of the regulation. As discussed later, we do in fact expect that costs to comply with EPA's proposed Clean Power Plan to be higher than $53/ton.

Coal Prices

When considering retirement of our existing coal generating units, it is important to consider the price of the coal used to fuel these units. Ameren Missouri has developed a range of delivered coal price assumptions to account for the uncertainty in the largest component of its coal fleet operating costs.

Generation Project Costs

The cost of construction for major generation projects is another key factor influencing the relative economics of the various options. This includes not only the costs of new generating facilities, but also the costs to maintain existing generation and add environmental controls to meet new environmental regulations. Our assumptions for project costs approximate those typically found in public sources and reflect ranges for cost uncertainty specific to each resource. Our assumptions for the cost of new generating resources are shown in Table 1.2.

Table 1.2 Project Cost Assumptions for New Generation

Resource	Project Cost - Expected Values ($/kW)
Combined Cycle (Nat. Gas)	1 259
Simple Cycle CTG (Nat. Gas)	766
Nuclear	5 000
Pumped Hydro Storage	1 739
Hydroelectric Keokuk Upgrades	4 739
Small Hydro 1	3 760
Small Hydro 2	3 980
Small Hydro 3	4 980
Solar	3 777
MO Wind	2 197
Regional Wind	1 879

Cost of Capital (Debt and Equity)

Interest rates and equity returns granted by utility commissions affect the relative economics of options by accounting for the investment returns needed to build, own and operate new generating plant. Interest rates are generally expected to rise over the next ten years. Based on external financial market research, we have assumed interest rates and commensurate utility returns on equity that reflect this expectation over the 20-year planning horizon.

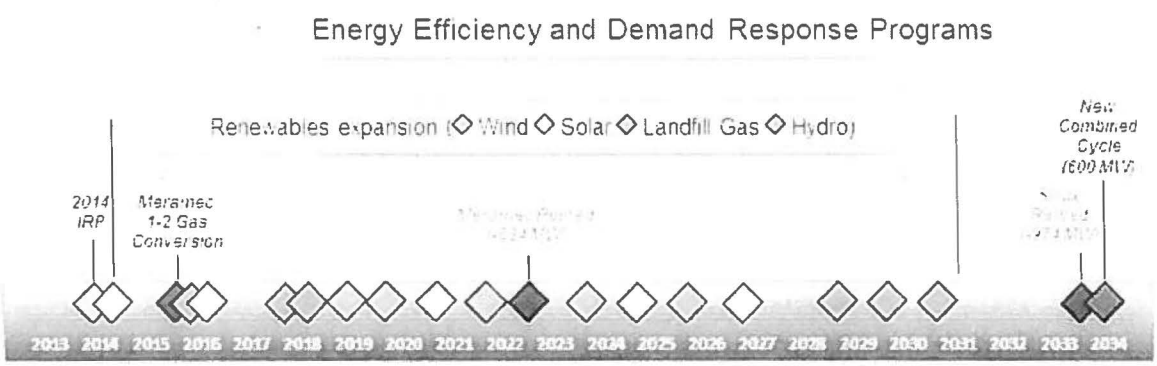
Cost and Performance of Demand-side Resources

The level of customer participation in energy efficiency and demand response programs and the level of customer incentives needed to solicit their participation affect the overall economics of demand side resources. Based on our extensive market research focused on the behaviors and attitudes of customers in Ameren Missouri's service territory, we have made estimates of the amount of achievable energy and demand savings available and the cost to achieve it.

1.5 Ameren Missouri's Preferred Resource Plan

Ameren Missouri has developed and is executing on a plan that is focused on transitioning its generation fleet to a cleaner and more fuel diverse portfolio in a responsible fashion over the next 20 years to ensure we provide service to our customers that is safe, reliable and environmentally responsible at a reasonable cost. Figure 1.4 presents a summary of our resource plan, including coal retirements and the addition of renewable and gas-fired resources.

Figure 1.4 Preferred Resource Plan Summary



Note: Plan allows for the inclusion of optional nuclear generation as a contingency.

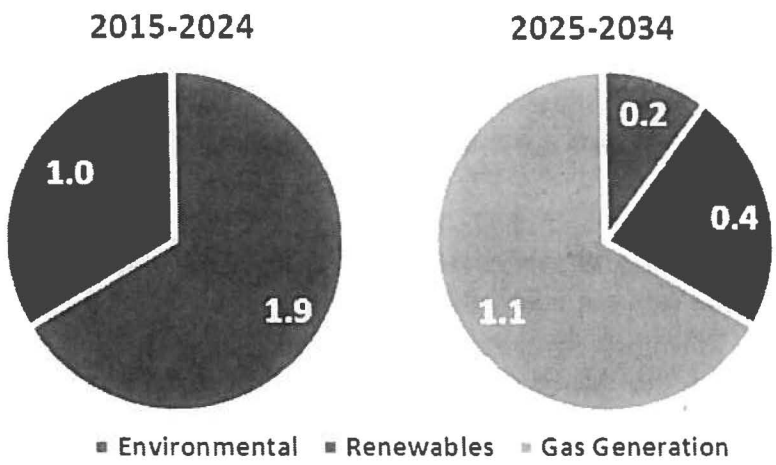
The development of our plan focused on several key elements, including optimizing the use of our existing low-cost generation resources through their normal life expectancy to minimize the cost to our customers, preserving Missouri's economic competitiveness and avoiding unnecessary investments. By 2035, our plan would result in a diverse mix of coal, nuclear, natural gas and renewable energy resources that would in turn allow us to achieve a reduction in carbon dioxide emissions of 30 percent below 2005 levels. It also allows us to comply with the requirements of Missouri's RES.

Our plan systematically incorporates generation resources with lower levels of carbon dioxide and other emissions. It also provides for flexibility in addressing environmental regulations, including those associated with greenhouse gases, while mitigating the potential for unnecessary investments. Because our plan is based on small incremental capital investments over time, it also allows us to effectively manage the risks associated with the development and adoption of distributed generation. In short, our plan allows us to responsibly transition to cleaner, more diverse sources of energy in a way that is beneficial to customers, shareholders, the environment and our communities.

Generation Investments

Our preferred resource plan includes investments in new renewable and gas-fired generation and in environmental controls on our existing generation fleet, as well as ongoing investments to ensure the safe, reliable and cost-effective operation of our existing fleet. Figure 1.5 shows our expected investment in new generation and environmental controls over the next twenty years.

Figure 1.5 Generation Investments ($Billions)



Note: Reflects known and expected future environmental regulations

Implementation

Over the next three years, Ameren Missouri's implementation plan will be focused on several key elements:

- ✓ Securing approval for our next three-year cycle of energy efficiency programs and implementing those programs starting in 2016 will allow us to continue to provide customers options for reducing their energy usage and their electric bills and defer the need for new sources of generation.
- ✓ Completion of our O'Fallon Renewable Energy Center solar facility and development of additional renewable resources, including a subsequent solar project to be completed in 2016, will allow us to comply with the requirements of the Missouri RES and also begin to expand our portfolio of renewable generation.
- ✓ Conversion of Meramec units 1 and 2 from coal to natural gas-fired operation will allow us to begin the managed transition of our coal-fired fleet.
- ✓ Reducing emissions of our existing coal fleet by continuing to make investments in pollution-control equipment
- ✓ We will be working to identify and evaluate sites for new generation such as wind, solar and natural gas combined cycle.
- ✓ Securing an extension of our operating license for our existing Callaway nuclear facility from the Nuclear Regulatory Commission will allow us to continue to rely on low-cost nuclear generation for the next 30 years.
- ✓ Continuing our efforts to support the development of new nuclear generation in Missouri, including the preservation of an option for reliable carbon-free generation and the associated economic development benefits for the state of Missouri.

Contingencies

Because the conditions and circumstances that affect our resource decisions are ever-changing, we must also be prepared for changes in circumstances that warrant a re-evaluation of our plan. There are a few key considerations that may result in a need for such a re-evaluation.

First, the implementation of customer energy efficiency programs requires that our interests are aligned with our customers' interests in using energy more efficiently. The Missouri Energy Efficiency Investment Act (MEEIA), passed and signed into law in 2009, requires that the Missouri Public Service Commission (PSC) provide cost recovery and incentive mechanisms that align our interests with those of our customers. In 2012, the PSC approved energy efficiency programs and associated cost recovery and incentive mechanisms that have allowed us to successfully implement those

programs starting in early 2013. That three-year program will run through the end of 2015. Later this year, Ameren Missouri will seek approval for a new three-year program beginning in early 2016. We expect that the PSC will once again provide cost recovery and incentive mechanisms that align our interests in energy efficiency with those of our customers. Should the requirements of MEEIA to align our interests not be met, it will be necessary to alter our plan and may be necessary to build new generating capacity, most likely natural gas-fired combined cycle.

Second, the continued development of nuclear power technology and the potential for financial incentives for implementation of new technologies provide a powerful incentive to maintain the option for adding nuclear power in the future. The associated economic development benefits may warrant a broad statewide effort to expand the use of nuclear power in Missouri. As the owner of the only existing nuclear power facility in Missouri, Ameren Missouri would almost certainly play a key role in any such efforts. With the announcement by the EPA in June of proposed regulations on the emission of greenhouse gases, maintaining an option for carbon-free nuclear generation also provides us with additional flexibility for meeting the requirements of the regulation once it is finalized and fully implemented.

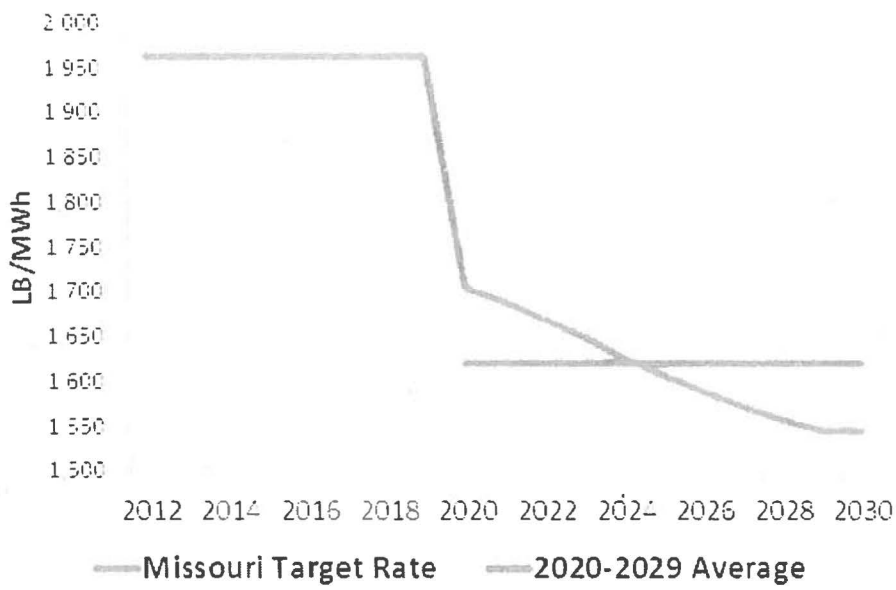
Third, we must be prepared to respond to further changes in environmental regulation. Ameren Missouri will continue to monitor and evaluate proposed regulations and the options available for complying with them. We will also continue to advocate for common-sense changes in proposed regulations that allow us to achieve the desired objectives while minimizing costs to our customers and maintaining flexibility in meeting customers' future electric energy needs.

In addition to these contingencies, we must also be mindful of the potential for changes in customer demand. As stated previously, our reliance on smaller incremental investments over time allows us to better manage the potential risks associated with the development and adoption of distributed generation. It also allows us to better manage the risks associated with the loss of a large customer. The potential impact on other customers of decisions associated with serving a single large customer can be significant. This is not limited to shifts in the responsibility for existing utility costs. It also includes the risks associated with planning to serve such a large customer when that customer may or may not require service from Ameren Missouri in the future. The flexibility to manage this risk is critical.

1.6 EPA's Proposed Clean Power Plan

On June 2, 2014, the EPA announced its proposed "Clean Power Plan," which calls for a 30% reduction in carbon dioxide emissions from existing power plants compared to 2005 levels from existing power plants by 2030, with aggressive interim targets beginning in 2020. These targets are not based on mass carbon emission reductions, but instead are based on rates of carbon emitted from existing plants as derived from 2012 levels. The EPA established different targets for each state, including a 21% reduction for Missouri. Figure 1.6 shows the required reduction and timing of carbon dioxide emission rates proposed by the EPA. As the chart shows, much of the targeted 2030 reduction, 13% of the 21% final target, is required starting in 2020 due to interim targets included in the proposed rule. This means that more than 60% of the 2030 reduction goal must be met by 2020.

Figure 1.6 EPA Target Carbon Dioxide Emission Rates for Missouri



The proposal's basic formula for setting CO_2 emissions reduction requirements is:

CO_2 emissions from fossil fuel-fired power plants (in pounds)

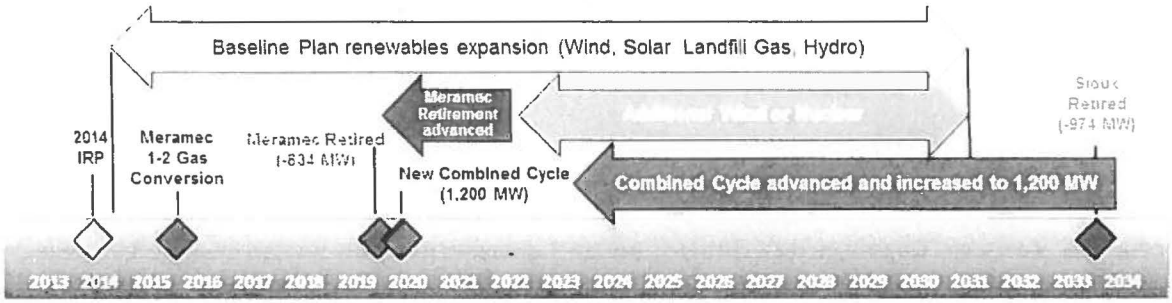
divided by:

Electricity generation from fossil fuel-fired power plants and certain low- or zero-emitting power sources (in MWh)

According to the EPA, this approach "factors in MWh from fossil fuel power plants and other types of power generation, such as renewables, new nuclear and natural gas combined cycle, as well as MWh savings from energy efficiency in the state."

Should the rule be implemented as proposed, Ameren Missouri would have to significantly alter its preferred resource plan in such a way as to lead to much higher capacity reserves by advancing and adding natural gas-fired generation, as early as 2020, and uneconomically dispatching those resources, which would not otherwise be needed until 2034 to meet customer demand and reserve margin requirements for reliability. Figure 1.7 illustrates the changes that could have to be made to Ameren Missouri's preferred resource plan to comply with the proposed regulations.

Figure 1.7 Impacts of GHG Regulations on Preferred Resource Plan



The changes include 1) advancing the retirement of Meramec by three years to the end of 2019, 2) constructing a 1,200 MW combined cycle generation facility to be operational by the beginning of 2020, 3) altering the operation of the new combined cycle and existing coal resources such that gas generation runs more (about twice what it would run otherwise) and coal generators run less than they would under current methods for economic dispatch in MISO, and 4) constructing additional wind (or possibly nuclear) resources in the 2022-2030 timeframe. Making these changes would result in additional costs to customers of approximately $4 billion over the 15 year period starting in 2020 while achieving roughly the same level of annual carbon dioxide emission reductions a few years earlier than under our preferred plan.

Ameren is advocating for changes to the EPA's proposed rules that will allow Ameren Missouri to execute its Preferred Resource Plan and achieve the overall objective of the Clean Power Plan to reduce carbon emissions by 30 percent below 2005 levels over a slightly longer period of time. Specifically, Ameren proposes that EPA:

1. Eliminate the aggressive interim emission reduction targets and give states, who possess intimate knowledge of their system needs, the flexibility to adopt interim milestones as appropriate
2. Treat unreplaced retired coal units as a zero-emitting resource (similar to how customer energy efficiency programs are treated)
3. Give states the flexibility to extend the compliance date to allow the orderly retirement of coal plants as states implement their transition plans

Comments to the rule are due December 1, 2014, and EPA expects to issue a final rule in June 2015. States are required to develop plans to implement the rule by mid-2016, with the possibility of a one or two year extension. Legal challenges to the rule are expected and could in turn cause significant planning and operational challenges in developing and executing plans to comply with EPA's proposed interim targets starting in 2020. The changes we are advocating would alleviate these planning and operational challenges in addition to saving our customers $4 billion.

1.7 Conclusion

Over the last few years, in conjunction with the Missouri Integrated Resource Planning process, Ameren Missouri has developed and is executing on a plan that is focused on transitioning its generation fleet to a cleaner and more fuel diverse portfolio in a responsible fashion over the next 20 years to ensure we provide service to our customers that is safe, reliable and environmentally responsible at a reasonable cost. The development of our Preferred Resource Plan focused on several key objectives, including optimizing the use of our existing low-cost generation resources, minimizing costs to customers, preserving Missouri's economic competitiveness and maintaining flexibility to manage the risks associated with changes in the conditions and circumstances that influence resource decisions. In short, our strategy and plan allow us to responsibly transition to cleaner, more diverse sources of energy in a way that is beneficial to customers, shareholders, the environment and our communities.