



# Planning

for a secure energy future

## **Contents**

- 1** A Message From AmerenUE's Chief Executive Officer
- 2** Integrated Resource Planning
- 4** Factors Behind The Need To Plan Carefully
- 9** Energy Efficiency Programs
- 9** Renewable Energy
- 10** Other Supply Options
- 12** Risk Analysis
- 13** Transmission And Distribution System Needs
- 15** Preferred Plan Summary

## A Message From AmerenUE's Chief Executive Officer



At AmerenUE, we consider our most important job to be delivering safe, reliable electric service at reasonable rates.

With that in mind, in 2007 we launched an exhaustive planning process to create our Integrated Resource Plan (IRP). This publication offers an overview of our planning process and preferred plan for ensuring adequate future energy supply, while protecting the environment and minimizing costs. It outlines the steps we took to analyze the energy efficiency and generation options and to address the uncertainties and challenges we expect to face.

We have engaged in formal integrated resource planning, with direction from, and the full participation of, our company's senior management. We have also had strong involvement from our stakeholders. We believe this rigorous, disciplined process has provided transparency and structure to the serious task of determining how to meet the needs of our customers going forward.

Again, one of the key objectives driving our planning has been a constant awareness of our commitment to supply safe, reliable electricity to our customers – at the lowest possible price. We realize that we must generate enough power to satisfy an ever-growing demand. However, we are also committed to aggressively pursuing the development of energy efficiency programs to reduce demand and to the development of renewable energy sources.

In fact, our annual investment to empower our customers to manage their energy costs is increasing from \$24 million in 2009 to nearly \$56 million by 2015. That level of investment from AmerenUE should place Missouri among the top 10 states in the nation in per-capita spending on energy efficiency.

AmerenUE is also pursuing an agreement to add at least 100 megawatts (MWs) of wind power to our generating portfolio by 2010. In addition, to further advance renewable energy options, AmerenUE launched Pure Power™ in 2007, a voluntary renewable energy credit program for Missouri residential and business customers. This publication describes those initiatives in greater detail.

Throughout this effort, another objective has been to ensure that our resource planning fully reflects our commitment to environmental stewardship. AmerenUE's corporate parent—Ameren Corporation—in December 2007 published a comprehensive report on the corporation's actions and policy position on climate change titled "Stewardship – Balancing the Needs of Our Environment, Our Customers and Our Economy." Completed under the direction of Ameren senior management and the corporation's board of directors, the report can be found at [www.ameren.com/EnvReport](http://www.ameren.com/EnvReport).

That report details how AmerenUE has worked over the past two decades to reduce sulfur dioxide and nitrogen oxide emissions in advance of regulatory mandates and how Ameren and its companies, including AmerenUE, intend to address reductions of carbon dioxide (CO<sub>2</sub>)



*A key objective driving AmerenUE's planning is a constant awareness of the need to supply safe, reliable electricity to customers—at the lowest possible price. AmerenUE serves 1.2 million electric and 125,000 natural gas customers across 20,000 square miles. The company's electric customers reside in 65 Missouri counties and 500 towns.*

– the greenhouse gas that is at the center of today's global climate change concerns. The report includes an assessment of technology options available today and in development to reduce CO<sub>2</sub>. In addition, the report presents the corporation's position on greenhouse gas policy proposals and their potential impact on customers and the economy.

In that environmental report, we stress that we firmly support mandates that will result in meaningful reductions of CO<sub>2</sub>. However, our position is that effective climate policy must balance the benefits to the environment against the potential for significant damage to the economy in the Midwest and throughout the nation.

Clearly, to secure a strong energy future we must carefully analyze the possible impact of all options. There are tradeoffs with any strategy we pursue—thus, at AmerenUE, we are rigorously exploring ways to address present and future challenges. Those approaches are described in greater detail in this report. As we move forward, let me assure you that we will continue to work hard to make the best use of all resources.

However, to ensure the success of the strategies outlined here, we need the involvement of not only our regulators and elected and appointed officials but also of all citizens who care about ensuring our energy future. Providing reliable supplies of low-cost electricity, while protecting the environment, is critical not only to our quality of life but also to this state's economic vitality.

We see this publication as a catalyst for discussion about critical energy issues and hope you will read it and share your comments and questions by emailing or writing us. Thank you for your interest.

Sincerely,



Thomas R. Voss  
President and Chief Executive Officer  
AmerenUE

---

**You can find the full Integrated Resource Plan at [www.ameren.com/resourceplan/](http://www.ameren.com/resourceplan/). Please send your questions or comments to AmerenUE Integrated Resource Plan, AmerenUE, P.O. Box 66149, MC 100, St. Louis, MO, 63166-6149, or via email to [ResourcePlanning@ameren.com](mailto:ResourcePlanning@ameren.com).**

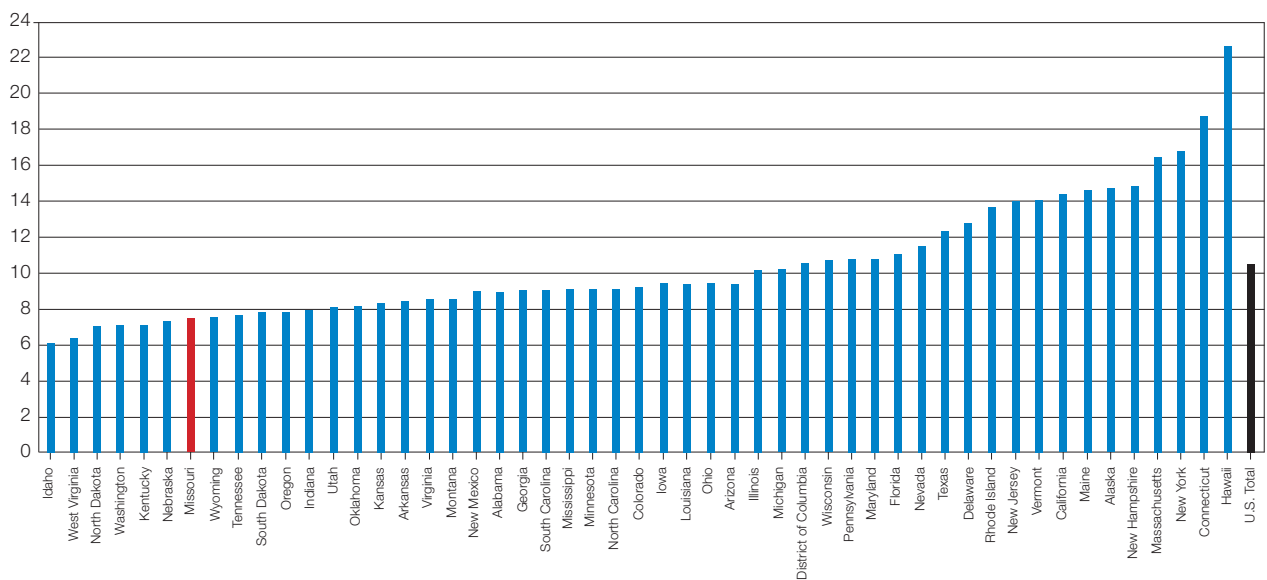
## Integrated Resource Planning

Missouri's largest electric utility company has focused consistently over its century-long history on providing reliable energy at a price its customers can afford. In fact, AmerenUE's electric rates are 37 percent below the national average—some of the lowest in the nation. The graph on page 3 shows how residential rates in Missouri

stack up against those in other states. Our efficient operations and focus on cost control have had an impact in keeping the state's power costs low. Our commitment is to continue to keep rates as low as possible while safely and reliably supplying power to our customers.

Clearly in meeting that commitment one of our key responsibilities to customers and shareholders is to carefully plan to meet future demand for electricity, while protecting the environment. Our key state regulator—the Missouri Public Service Commission (MoPSC)—also recognizes its role in fulfilling this responsibility—that's why we have the integrated resource planning regulation.

**Residential Electric Rates in Cents/kWh  
(12 Months through July 2007)**



**Behind the Push for Planning**

Resource planning in Missouri and many other states dates back to the 1980s when regulators sought to ensure a utility’s expansion plans included a broad array of alternatives and were transparent. AmerenUE filed an IRP in 1993, but by 1999, the rules requiring IRP filings were tabled in favor of semi-annual briefings with MoPSC Staff and the state’s consumer advocacy agency—the Office of Public Counsel.

Now, 23 states, including Missouri, require formal IRPs. The IRP is seen as a way to logically analyze and plan the best way to provide electricity as U.S. utilities grapple with the need to commit an estimated \$800 billion to \$1 trillion in infrastructure investment in the next 15 to 20 years. Driving the unprecedented expenditures is the

need to upgrade aging facilities, build new transmission and generation facilities, and install environmental controls to respond to the ever-increasing demand for electricity.

**Costs Are Increasing**

Also affecting investment are higher costs for everything from fuel to materials to labor. And because of the long lead time for new facilities, utilities must begin the planning and approval process for new resources years before they are needed. The utility must also project market conditions and deal with financing arrangements far in advance of actual construction. All these factors have prompted the renaissance of IRP as a valued tool for helping us plan for our energy future.

With the AmerenUE IRP that was filed Feb. 5, 2008, we sought to:

- offer customers a range of programs that encourage more efficient use of energy;
- capitalize on energy efficiency and renewable resources before building baseload generating capacity;
- evaluate various supply options;
- strengthen customer service;
- minimize environmental impact; and
- provide demand side and supply options to balance risk among stakeholders.

### Involving Stakeholders

For the first time, our most recent resource planning effort involved significant stakeholder discussion and involvement prior to its filing with the MoPSC. During 2007, AmerenUE management conducted more than two dozen meetings with representatives from organizations that included consumer advocates, representatives who serve low-income customers, advocates for large business interests, environmental activists and officials from the Department of Natural Resources, the Office of

Public Counsel and the MoPSC staff. (See *Stakeholders Comment On The Process*.)

These stakeholders joined AmerenUE in developing a suite of energy management programs, and in October 2007, the company conducted well-publicized workshops on the programs in St. Louis, Cape Girardeau and Jefferson City to get public comment. More than 200 citizens attended these programs and offered comments to help shape the two dozen initiatives.

## Factors Behind The Need To Plan Carefully

Cost minimization and reliability are the primary goals of utility company IRPs. However, an effective IRP must also focus on:

- Demand growth in conjunction with energy efficiency initiatives;
- Supply side resource options under various regulatory and legislative mandates;
- Improved use of existing generation; and
- The prospect of unit retirement or mothballing.

### Stakeholders Comment On The Process

"It has been helpful to me and the stakeholders I represent to have input during the preparation of the IRP. I get to make suggestions, and sometimes, I can point out potential problems before they get into the final document."

*Henry Robertson  
Staff Attorney, Great Rivers Environmental Law Center,  
St. Louis, MO*

"I want to thank AmerenUE for having the forethought to involve us in this Integrated Resource Planning process. AmerenUE and others involved in the process made

sure that we had all the information necessary to participate and were receptive to our ideas and suggestions. Opening this process to the community by having forums around the state was a great way to test the ideas we had and get additional input from others in the community. The most important benefit to our involvement in the process is that our input and ideas helped shape a low-income efficiency program that meets the goals of the planning process and maximizes the benefit to many low-income families for years to come."

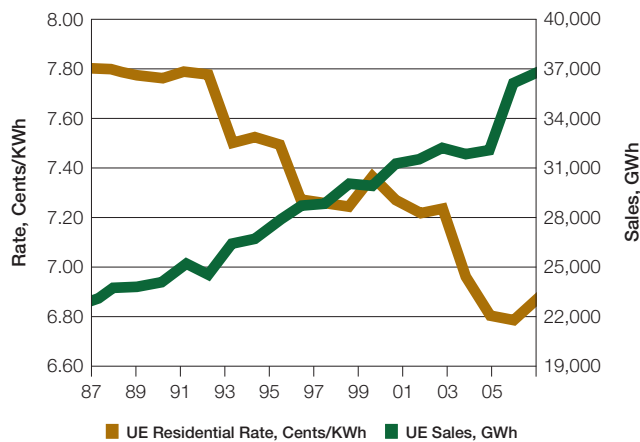
*Jackie Hutchinson  
Director, Energy Assistance, Human Development  
Corporation, St. Louis, MO*

Planners must also consider the impact of rising fuel and fuel transportation costs and the need for fuel diversity to mitigate fuel price risks – all with an eye toward minimizing customer exposure to volatile fuel pricing and shortages. Finally, planners must thoroughly analyze the benefits of promoting energy efficiency initiatives and developing renewable energy sources.

### Demand Growth

Demand growth will always remain a major consideration in planning. Consumption of electricity by our customers has increased by 50 percent since the 1990s while residential rates declined.

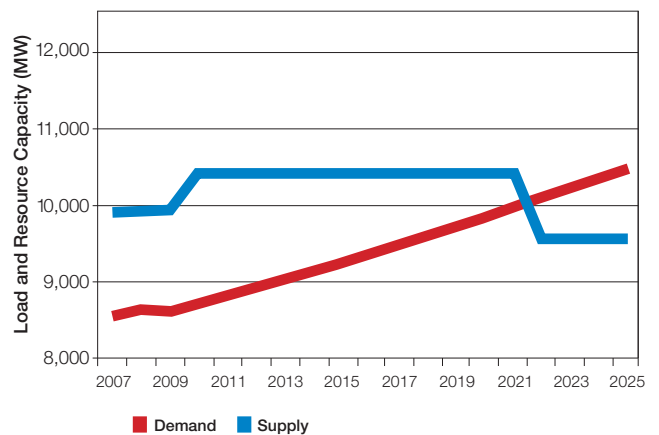
### AmerenUE Residential Rates & Energy Sales



The graph above shows that while sales of electricity grew in our Missouri service territory, rates continuously declined—in fact several times between 1987 and 2006. Meanwhile the supply of electricity from the large, baseload generating plants that run almost continuously at or near full capacity to meet demand has not grown significantly in those years.

Our analysis shows that through 2025 demand for electricity will continue to increase while AmerenUE’s supply of power will remain largely static and then decline due to the need to retire aging generating plants.

### AmerenUE Load and Resource Capacity



In addition, our analysis indicates that demand is expected to grow by 2,000 megawatts by 2025 without any concerted effort to promote energy efficiency. Our models show that savings could be realized both in generating capacity and total energy used with the aggressive implementation of energy efficiency initiatives, delaying the need to build more power plants. Strong efficiency programs also help reduce the need to generate electricity from existing power plants—avoiding emissions of CO<sub>2</sub> and other pollutants.

Our integrated resource planning calls for reducing demand and energy growth through these efforts at aggressive levels: we would realize annual reductions in projected energy growth from 1.36 percent to 1.05

percent for a total 25 percent reduction in growth in demand for electricity by 2025. Meeting these goals involves implementing multiple programs designed to encourage consumers to modify their level and pattern of electricity and closely monitoring the effectiveness of these programs.



*For many years, AmerenUE has offered customers a Web-based energy efficiency program to help them analyze their bills, calculate the savings potential of energy efficient appliances and find out what portion of their energy use goes for heating, cooling, laundry and other uses. Customers can access this Energy Savings Toolkit at [www.ameren.com](http://www.ameren.com).*

### **Goal To Defer Building Baseload**

All these actions are aimed at deferring the need to build baseload power plants. For most utilities across the nation, including AmerenUE, it's been more than two decades since any baseload generating plant has been built. We've used peaking, natural gas-fueled generating plants to make up the shortfall. They carry higher operating cost due to that fuel choice, but are less

expensive to build and staff. However, our analysis shows that ultimately – in the 2018-2020 timeframe – we will need to build baseload generation to maintain adequate reserve margins for our customers' demand growth.

### **Environmental Challenges**

Generating and delivering electricity affects the environment in many ways. Extracting coal, uranium and natural gas from the earth disturbs the natural environment. Converting fuel into electricity results in discharges of emissions and wastes. Paths have to be cleared to install transmission lines to bring electricity to our homes and businesses.

Renewable energy sources have their impact, as well: Wind turbines can have an impact on avian species and other wildlife. Wind turbines can also be noisy, and they require a great deal of land, as do solar energy installations.

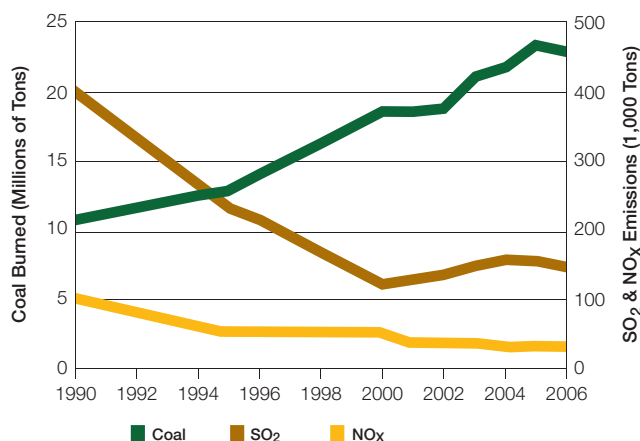
Whatever the fuel choice, there are trade-offs. The issue of permanent storage for nuclear waste has yet to be solved; natural gas prices are volatile and gas is scarce; oil is even more expensive and continued reliance on foreign oil has national security implications.

At AmerenUE, primarily through the use of coal-fired generation, we have managed to provide low-cost power for decades, while aggressively reducing power plant emissions, specifically sulfur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO<sub>x</sub>) – well in advance of federal environmental mandates. And while we have successfully reduced emissions, we have continued to meet our customers growing need for power. As the graph shows, we have burned much more coal over the past 15 years, while significantly cutting emissions.

However, going forward, as emission reduction requirements become even more stringent, AmerenUE, with 77 percent of its power generated by coal-fired plants, will need to make significant investments in research and testing so that we can eventually install additional commercially proven emission controls.



### AmerenUE Coal Burned, SO<sub>2</sub> & NO<sub>x</sub> Emissions



### Existing Emissions Mandates for Coal-Fired Generation

Facing us immediately is the requirement to further reduce SO<sub>2</sub> and NO<sub>x</sub>. Over the next 10 years, the U.S. Environmental Protection Agency's (EPA) Clean Air Interstate and Clean Air Mercury Rules will require reductions of 70 percent in SO<sub>2</sub>, 57 percent in NO<sub>x</sub> and 70 percent in mercury emissions (compared to 2000).

All this will require plant upgrades. And while we have been an industry leader in reducing SO<sub>2</sub>, and NO<sub>x</sub>, the mandated reduction of mercury emissions poses greater challenges. Technology does exist that will remove mercury but not on a scale that can remove mercury to the degree demanded by some state regulations. In cooperation with the U.S. Department of Energy's National Energy Technology Laboratory, we began assessing the feasibility and cost of controlling mercury from coal-fired plants in 2004 as part of our efforts to expand research into mercury removal technologies. We are also installing scrubbers at the AmerenUE Sioux Power Plant in St. Charles County, Mo., and these are

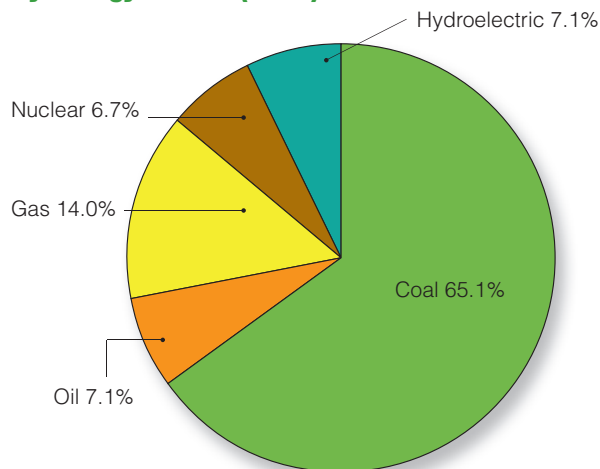
expected to significantly reduce mercury emissions. (Scrubbers are devices that use liquid spray to remove emissions from the air stream; solids and liquid particulates are removed through contact with the spray.)

We are addressing standards for ozone, regional haze and fine particulates. The U.S. Environmental Protection Agency revised its national ambient air quality standards for ozone in 1997. State and local governments have developed a number of new emission-reduction rules to meet these standards, as well. We intend to meet or exceed these mandates.

### Most Vulnerable to Possible Reductions of CO<sub>2</sub>

Heavy reliance on coal-fired generation also makes our region vulnerable should there be a requirement to significantly reduce CO<sub>2</sub>. This graph shows Missouri's current generating capacity by energy source:

### Missouri's Generating Capacity by Energy Source (2006)



Given our region's reliance on coal-fired generation, we believe effective climate policy must balance the benefits to the environment against the potential for significant damage to our economy. Our analysis shows that under some policy scenarios being considered, household costs could rise significantly and rates for electricity could double by 2030. The burden could fall particularly hard on electricity consumers and the Midwest economy because of the region's reliance on electricity generated by coal-fired power plants. A full report on environmental issues facing Ameren Corporation and the analysis of the impact of policy scenarios can be found at [www.ameren.com/EnvReport/](http://www.ameren.com/EnvReport/).

As this environmental report shows, we have devoted significant resources to understanding the science of climate change and the implications of alternative U.S. carbon policies on the environment and the economy, as well as on our customers and shareholders. To best serve all of these constituencies, AmerenUE will continue to seek cost-effective opportunities to reduce and offset CO<sub>2</sub> emissions.

### Regulatory Challenges

AmerenUE foresees a need to seek frequent regulatory rate relief, given rising operating costs, the need to invest in infrastructure and the ultimate need to build baseload generation. In effect, we are moving from a world of cost-containment to one where managed, effective investment is key to our energy future.

Part of this transition will involve managing the impact on the customer by seeking more frequent, but smaller, electric rate increases. In fact, AmerenUE plans to file for an electric rate increase in the second quarter of 2008 with a ruling on that case expected in 2009.

### Need to Recover Dramatically Increased Costs

In the almost 20 years between the rate increase AmerenUE received in 1987 and the small increase of \$43 million AmerenUE received in 2007, the company has experienced dramatic increases in fuel and transportation, labor, material, bad debt, depreciation and

financing costs and has invested billions of dollars in infrastructure improvements.

Clearly the need to recover these costs has prompted us to work even harder to build a constructive regulatory and legislative framework in which to operate day-in and day-out.

The next section describes our *preferred plan* for providing reliable supplies of electricity in coming years. The central components of our planning strategy are a significant expansion of our efforts to help reduce our customers' demand for electricity and a strong focus on developing renewable energy resources while evaluating future baseload generation options.



*AmerenUE has long supported energy efficiency programs. In 2007, AmerenUE donated 25,000 compact fluorescent light bulbs (CFLs) to help low-income seniors across Missouri. For a number of years, AmerenUE has sponsored deep-discount events to help customers save money and energy by purchasing ENERGY STAR®-qualified CFLs for less than \$1. Using CFLs is a quick and easy solution to lowering utility bills in addition to saving energy and protecting the environment.*

---

## Energy Efficiency Programs

Across the nation, utility companies, like ours, are taking a very serious look at the potential benefits of energy efficiency programs. These programs help customers reduce their utility bills and help the environment by reducing the number of kilowatthours we must generate. Less power use reduces emissions and the stress on our delivery and generation systems.

In mid-2008, we expect to launch over a dozen programs that will help our Missouri customers conserve and manage energy consumption. The full list can be found at [www.ameren.com/energyefficiency](http://www.ameren.com/energyefficiency). The goal is to reduce electricity consumption growth through a combination of customer efficiency initiatives, consumer education programs and equipment upgrades and replacement over the next 20 years.

### Among Top 10 In Investment in Energy Efficiency

In 2009, we will be spending \$24 million on energy efficiency programs, a number that will grow to nearly \$56 million for the year 2015. That level of spending from AmerenUE should place Missouri among the nation's top 10 states in per capita investment in energy efficiency programs.

## Renewable Energy

AmerenUE has a long history of incorporating renewable resources into our generation portfolio. Over the years, we have increased our hydroelectric generation capacity through maintenance upgrades at our Osage and Keokuk plants, and we plan to increase capacity at those plants in the future. And with an intensified focus on renewables today, we have a more robust plan for incorporating renewables into our overall power generation mix.

In this planning process, various renewable portfolio options were analyzed to assess cost effectiveness relative to other demand and supply options. In 2008, we expect to do an even more rigorous and detailed assessment of prospective regional renewable resources,

like hydroelectric, landfill gas, anaerobic digesters, plus generation from biomass and wind. Once we identify regional resources with the most technical and economic potential, we will implement a plan to develop those resources.

Thus, as a result of the IRP analyses, AmerenUE will be making additional commitments to add renewable energy supply options to its generation portfolio.

### Missouri Bill 54 Sets Targets

Recent legislative action in Missouri also encourages development of renewable energy resources. Missouri Senate Bill 54 "Green Power Initiative," which was signed in June 2007 by the governor of Missouri, sets "Green Power" energy "targets" of 4% of total retail electric sales from certain renewable energy technologies by 2012; 8% of total retail electric sales by 2015; and 11% of total retail electric sales by 2020. Gains from energy efficiency programs can be used to meet these targets. In addition, electricity generation from renewable sources prior to August 28, 2007, may be counted toward the targets, provided they continue to be used.

### Adding 100 Megawatts of Wind Power

In response to the need to expand renewable resources in our region, in 2007, AmerenUE signed a letter of intent to add at least 100 megawatts of wind power to its generating portfolio by 2010.

### Pure Power™

To further advance renewable energy options, AmerenUE also launched Pure Power™ in 2007, a voluntary renewable energy credit program for Missouri residential and business customers. Pure Power allows residential customers to voluntarily pay an additional 1.5 cents per kilowatt-hour (kWh) to purchase renewable energy credits to encourage development of renewable resources. AmerenUE's small, medium and large business customers participate by purchasing 1,000 kWh "blocks" of Pure Power for \$15 per block. Business customers can purchase as many blocks as they want.



## Other Supply Options

### Generation Plant, Upgrades and Retirements

AmerenUE's fleet of generating units includes four coal-fired facilities with a total generating capacity of over 5,400 megawatts; they began operating between 1953 for Meramec Plant in South St. Louis County to 1976 when the newest coal-fired plant in our fleet – Rush Island Plant, in Jefferson County, Mo. – came online. The company's 1,240-megawatt single-unit nuclear plant in Callaway County began operating in 1984. The company also has three hydroelectric plants, with a net capacity totaling approximately 800 megawatts when all

are in service. In addition, AmerenUE has 15 combustion turbine facilities fired largely by natural gas—with a combined capacity of over 2,500 megawatts.

Over the years, we have implemented a range of generation improvements, including efficiency control enhancements in our coal-fired plants, maintenance upgrades in our hydroelectric plants and the repowering of an old coal-fired plant as a combined-cycle natural gas plant.

In analyzing the least-cost, most environmentally friendly options for future generation, company strategists looked at combined cycle and simple cycle natural gas-fired combustion turbine units, pumped storage hydroelectric power and nuclear generation as possible options.

With combined cycle generating technology, electricity is produced from otherwise lost waste heat exiting from one or more turbines; simple cycle turbines consist of a compressor section, which pumps the air for combustion, and a combustion section, where the compressed air is mixed with natural gas or oil and burned. Pumped storage hydroelectric power offers the only method now in commercial use for large-scale storage of electricity; electricity produced at times of low demand is used to pump water into a reservoir; at times of high demand, the water is released and used to operate hydroelectric generators to produce electricity.

#### Technology Analysis Continues

In addition, we evaluated generation technologies that are still in the development stage. Over the years, at AmerenUE, we have been forward-looking in analyzing technology options, but more recently we have explored a number of generation technologies that could have promise in reducing CO<sub>2</sub>. These include **Advanced Ultra-Supercritical Combustion**, which uses oxygen-fired ultra supercritical pulverized coal combustion – a more energy efficient and environmentally friendly technology; **Integrated Gasification Combined Cycle** – one of the more mature technologies for converting coal to gas for efficient combustion; and **Carbon Capture and Storage** – capture and storage of CO<sub>2</sub> is key to reducing greenhouse gases in the deployment of these technologies. (For more detailed descriptions, see [www.ameren.com/EnvReport](http://www.ameren.com/EnvReport).)

#### Possible Unit Retirements

Because AmerenUE's baseload power plants range in age from 24 to 55 years, the company must look at unit retirement or mothballing for units, like those at the Meramec Plant, that may be too inefficient to operate in a carbon-constrained environment. Our plan calls for continued analysis of existing generating units that, depending on the scenario for reducing air emissions, particularly CO<sub>2</sub>, would require upgrades that are so costly it would be difficult to justify their continued operation.



*The Callaway Plant has achieved the fourth highest generation record from among more than 100 U.S. nuclear power units.*

#### Preserving an Option for New Nuclear Power Generation

After analyzing various options for adding baseload generation, our preferred plan includes maintaining the option of building a new nuclear unit—with the clear attraction of nuclear generation being that it does not emit CO<sub>2</sub>.

Over the past two decades, Callaway Plant has been the fourth-highest power generator from among more than 100 U.S. nuclear power units. Our continuing investment in upgrades has improved efficiencies and increased generating power capacity by 62 megawatts. Through 2007, Callaway's nuclear unit had generated 209 million megawatthours with no CO<sub>2</sub> emissions.

### Agreement with UniStar Nuclear

In 2007 AmerenUE signed an agreement with UniStar Nuclear, a joint enterprise that helps develop, license, construct and operate new advanced design nuclear units. Together, we are preparing and will submit a construction and operation license application (COLA) to the U.S. Nuclear Regulatory Commission. This application is only a first step in a multi-year regulatory approval process. While it does not represent a final decision, this step preserves our option to build a new nuclear unit in the future.

### Risk Analysis

AmerenUE strategists used a classic decision-analysis process to analyze critical, uncertain factors affecting potential resource plans. In addressing a range of risks in today's energy environment, AmerenUE's planners explored each risk individually and in relation to each other. They applied a battery of analyses to all risk factors and developed a decision tree that applied probabilities for these factors—some independent and some dependent.

### Market, Regulatory Risks Greatest

Market risks and regulatory issues remain high on the list of risk factors – these involve the likelihood that there will be mandated reductions for CO<sub>2</sub> and high fuel costs. In particular, natural gas is subject to the kind of price volatility that makes it high risk.

A range of other key risk factors were also considered:

- Rising capital costs and interest rates;
- Greater outage rates for generating units;
- Variable and fixed operating and maintenance costs;
- The possibility that federal incentives for developing nuclear power or renewable power might not be available in the future impacting the development of renewable energy sources;



*The drop and rise of the market price for electricity is a significant risk factor considered in developing resource plans. Traders, like the ones above, trade electricity hourly across the nation. Volatile power prices can affect AmerenUE's revenues generated by marketing power into wholesale and interchange markets.*

- The drop or rise of the market price for electricity which would affect interchange sales; and
- Uncertainties related to public acceptance of energy efficiency programs.

### Climate Warming Presents Greatest Risk

Of all the risks, the need to reduce greenhouse gases from our generating plants has the most pervasive impact on long-term resource planning. Because our economy is based on carbon, reducing greenhouse gases will require completely new thinking, still undiscovered technologies and massive new levels of investment.

From extensive economic modeling, we know that reducing CO<sub>2</sub> emissions will have a significant impact

on jobs, lifestyles and our economy, as well as on our environment. Even with meaningful reductions in energy consumption, consumers will face higher costs for everything from energy to household goods. The economic stakes — particularly for the region we serve — are enormous. There is no single answer to this challenge. It will require a portfolio of solutions from new emission technologies to energy-efficiency programs to renewable resources to carbon capture-and-storage initiatives to increased nuclear generation.

### **Energy Efficiency Success Depends on Acceptance**

In the end, the success and effectiveness of our proposed energy efficiency programs depends upon our customers' willingness to participate. While we have worked with stakeholders to design an effective portfolio of programs to reduce energy demand, we realize that extensive customer awareness will be required to build broad participation and to attempt to change the behavior of customers who have continued to use more and more electricity each year because the price of electricity in Missouri remains very low compared to the power prices of other regions. We will seek to actively demonstrate to our customers the benefits of these various energy efficiency programs to help reduce consumption.

### **Federal Production Tax Credit Essential**

Renewable energy reduces vulnerability to fuel price increases and is, in some cases, non-emitting, but it is still more costly than most other generation options. For these reasons, renewable energy — including hydroelectric power — only accounts for about 8 percent of the nation's generation—1 percent of that from wind.

However, supporting the development of renewable energy, particularly wind, is a federal production tax credit (PTC), which provides a 1.9-cent per kilowatt-hour (kWh) benefit for the first 10 years of a renewable energy facility's operation.

The PTC is set to expire on December 31, 2008, but it is expected that industry and clean energy supporters will continue to press for its extension beyond that date, citing this incentive as an essential factor in ensuring future renewable energy resource development.

### **Need for Land, Transmission Infrastructure**

Across the U.S., development of renewable energy faces regulatory hurdles and resource issues because of the need for large amounts of land and reliance on natural resources, such as wind, that are intermittent by nature.

Renewable energy resources are also limited in our region. A major issue with renewables is that the nation lacks the transmission infrastructure to bring wind energy from high-wind areas (usually where few people live) to places like Missouri where wind is not prevalent and to cities where electricity demand is greatest.

The IRP we filed Feb. 5, 2008, offers more detailed analysis of the impact of these risk factors.

## **Transmission And Distribution System Needs**

Efficiently managed transmission and distribution systems with enough capacity to handle the ever-increasing demand for electricity are key to reliably delivering power from generating facilities to the customer. AmerenUE has 2,930 circuit miles of electric transmission lines, which move electricity from power plants over long distances, and more than 32,200 circuit miles of electric distribution lines, which move electricity into areas where businesses operate and people live.

### **\$1 Billion Program To Improve Reliability**

The company regularly expands distribution infrastructure and faces fewer obstacles and less expense with these projects than with its transmission system. In fact, in



*For many years, AmerenUE has invested in the development of one of the utility industry's most robust transmission systems—with 2,930 circuit miles of electric transmission lines at year-end 2006 and many more miles being developed to respond to increased demand. Consumption of electricity by our customers has increased by 50 percent since the 1990s, while residential rates have declined.*

mid-2007, AmerenUE launched a \$1 billion, three-year program to improve reliability, upgrade delivery systems, and enhance the environmental performance of its power plants. Named “Project Power On,” this initiative involves:

- A commitment over and above the \$500 million per year the company has been spending to upgrade and maintain the system. This commitment includes \$300 million over three years for undergrounding and reliability improvements;
- \$135 million over three years (\$45 million annually) for tree-trimming — nearly twice the budget of a few years ago;

- \$84 million over three years (approximately \$28 million per year) for circuit and device inspection; and
- \$500 million over three years to address the growing energy needs of the region by installing environmental controls on existing plants (principally for a scrubber to reduce emissions at AmerenUE's coal-fired plant in St. Charles County – Sioux Plant).

Power On comes in response to the need to harden the system against the increasingly severe weather patterns that are striking our region.

#### **Strong Transmission System Investment**

For many years, AmerenUE has invested in the development of one of the utility industry's most robust transmission systems, and the company has expanded that system in recent years and will continue to do so.

Given increasing demand for electricity over the next three years, Ameren Corporation plans to complete five new transmission lines and substations and upgrade 23 existing transmission facilities for a total investment of \$103 million. These facilities will be located primarily in the AmerenUE service area to serve AmerenUE customers.

One major challenge AmerenUE and other utilities have faced in building transmission lines is opposition from property owners, environmental groups and community leaders in the areas where these lines need to be built.

#### **Push for Equity in Cost-Sharing**

Since 2004, AmerenUE and its sister companies have been members of one of the nation's 12 independent or regional transmission operator (RTO) organizations – the Midwest Independent Transmission System Operator or Midwest ISO. Midwest ISO was approved as the nation's first RTO in 2001 and was created as an independent, nonprofit organization that supports the delivery of wholesale electricity in 15 U.S. states and the Canadian province of Manitoba across nearly 94,000 miles of inter-connected high voltage power lines.



In responding to the challenges of this new world of transmitting power, AmerenUE has aggressively advocated for equity and fairness in sharing the cost of building and operating the system both in its discussions with the Federal Energy Regulatory Commission, which has authority over the nation's transmission system, and through its membership in the Midwest ISO.



*Constantly tracking the distribution and dispatch of electricity, AmerenUE uses sophisticated systems to help ensure safe, reliable delivery of sufficient supplies of power.*

## Preferred Plan Summary

This publication has described briefly the complex process AmerenUE has employed to determine how to meet the growing demand for electricity at affordable rates, while protecting the environment and our region's economy.

We have looked comprehensively at all options, have encouraged participation of a number of parties and

have incorporated a range of uncertainties and risks in a rigorous analysis of dozens of scenarios before coming up with this plan.

Developed under the direction of AmerenUE's officers, our IRP allows us to defer construction of baseload generation in favor of promoting energy efficiency and developing renewable energy.

### Support for Energy Efficiency

Our goal for reducing demand on our system through implementation of energy efficiency programs is 540 megawatts by 2025. We also believe that our strong support for energy efficiency initiatives will not only benefit the environment but provide an economic boost through the creation of jobs in "green" energy industries, like the development and growth of businesses focused on selling energy efficient appliances, providing highly efficient industrial processing equipment or weatherizing homes and commercial operations.

However, while we are committed to advancing our operation's and customers' efficiency efforts, we need time to realize the benefits of these programs, monitoring their effectiveness and gathering data to determine their actual impact.

### Expansion of Existing Renewable Generation

In addition, our target is to serve an additional 3 percent of retail electric sales through new renewable resources by 2020. Our plan calls for expanding the role of renewable energy sources in our overall power generation mix, which means not only the development of renewable energy sources, but also increased hydroelectric generation capacity through upgrades at our Osage and Keokuk plants. We are exploring the viability of other renewable energy sources, including solar power, biomass, landfill gas and wind power. Going forward, we plan to even more fully analyze the technical and economic potential for development of renewable resources in our region.



*Illinois is more favorably positioned than Missouri as a “wind state” because of the greater availability of sustained winds needed to drive turbines.*

---

### **Continue To Increase Unit Efficiency**

The plan also factors in a continued commitment to increased generating unit efficiency. Over the years, while we have focused heavily on making all operations more efficient, continued improvements at our existing plants are expected to yield us in the range of 90 to 200 megawatts of additional capacity. That would bring total AmerenUE capacity, which stands now at 9,957 megawatts, above 10,000 megawatts.

### **Unit Retirement Expected**

In 2009, the company will complete an analysis that will indicate which generating units in AmerenUE must be retired. The IRP indicates which units are likely candidates for retirement, specifically units at Meramec Plant, and states that, even with effective implementation of

energy efficiency programs, AmerenUE will not be able to defer construction of baseload generation indefinitely.

### **Exploring Technologies To Reduce Carbon**

Our analysis clearly shows that developing reliable electricity supplies for Missouri customers will eventually require development of baseload power plants – the estimated time frame for that is 2018 to 2020.

For that reason, we are preserving the option for additional nuclear generation, while researching clean coal and carbon sequestration technologies. In addition, we will continue to explore and test innovative new technologies for reducing emissions, particularly CO<sub>2</sub>.

We have taken steps to reduce our carbon footprint and devoted significant resources to understanding the science of climate change and the implications of alternative U.S. carbon policies on the environment and the economy, as well as on our customers and shareholders. We will actively promote balanced policies that advance long-term, sustainable carbon removal from our energy systems without creating severe economic disruption. The complete list of principles that we believe would provide a balanced approach to resolving this issue can be found in our recently published environmental report – found at [www.ameren/EnvReport](http://www.ameren/EnvReport).

### **Please Contact Us:**

At AmerenUE, we remain committed to fine-tuning our planning processes to ensure our asset investment decisions meet our stewardship responsibilities. We see this publication as a catalyst for discussion about critical energy issues facing the state of Missouri. Please share your comments and questions by emailing or writing at AmerenUE Integrated Resource Plan, AmerenUE, P.O. Box 66149, MC 100, St. Louis, MO, 63166-6149, or via email to [ResourcePlanning@ameren.com](mailto:ResourcePlanning@ameren.com).



*A 42-inch plasma television can consume more electricity than a full-size refrigerator, even when the TV is used only a few hours a day. The increased use of appliances, like these new televisions, has caused a major increase in energy consumption. Ensuring adequate future energy supply, while protecting the environment, is a major goal of AmerenUE's integrated resource planning effort—so is developing energy efficiency programs to reduce demand.*

---



AmerenUE  
P. O. Box 66149, MC 100  
St. Louis, MO, 63166-6149 or  
via email to [ResourcePlanning@ameren.com](mailto:ResourcePlanning@ameren.com)

[www.ameren.com](http://www.ameren.com)



50% Pre-consumer fiber  
25% Post-consumer fiber



109