Next Generation Energy Technology at Ameren to Help Secure Missouri’s Energy and Economic Future

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Powering Missouri

Integrated Electric & Gas Utility
- 1.2 million electric customers
- 127,000 natural gas customers
- 24,000 square miles of service territory
  - 2,900 miles of electric transmission lines
  - 33,000 miles of electric distribution lines
- 10,500MW of generation
- Serve more than 63 counties and more than 500 communities
- ~4000 employees

2012 Fuel Mix
- Coal - 72%
- Nuclear - 24%
- Renewables - 3%
- Natural Gas - 1%
Providing Reliable Service

- Reliability has improved significantly
  - Outage frequency down 35%
  - 2012 performance best in our history
  - Expected to be in the top 25% in the country

Ameren Missouri measures the total number of electricity outages per customer each year.
Providing Cleaner Air

- Reduced sulfur dioxide emissions by ~50% since 2007
- Completed Maryland Heights Energy Center in 2012
  - Added 14 MWs of renewable energy to our portfolio
  - MHEC is one of the largest landfill gas-to-electricity generating energy centers in the United States
  - Turning trash into green energy is a win for the environment, a win for our customers, and a win for the state
- Two continuous runs between refueling outages at our Callaway nuclear plant in past three cycles (520 and 490 continuous days)
Keeping Energy Costs Competitive

- Ameren Missouri's electric rates are 20% below the national average.
- Ameren Missouri’s electric rates are 14% below the Midwest states’ average.
- Ameren Missouri has the lowest electric rates of any investor-owned utility in Missouri.

Sources and Notes: EEI Summer 2012 Typical Bills and Average Rates Report, Midwest states based on Census Region definitions as reported to EEI. Averages are for 12 months ending June 2012. Ameren Missouri rate includes increase effective 1/2/2013.
FUTURE FOCUSED
Aging Infrastructure

MO Utility/Muni/Coop Owned Coal Capacity

Average age of coal power plants - 45 years

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Technology Assessments

Sustainable/Clean Energy Sources:
- Wind
- Solar
- Hydro
- Biomass
- Small Modular Reactors (SMR)

Customer Partnerships:
- Energy Efficiency
- Net Metering

Addressing Infrastructure Investment Needs - ISRS
Potential for wind generation varies widely across the country
Wind Generation

Ameren Missouri signs its first ever contract for wind energy on June 10, 2009

- Horizon Wind Energy’s Pioneer Prairie Wind Farm located in north central Iowa
- 15 year contract
- 102.3 MWs - 62 turbines spanning 10,000 acres
- Annual Production
  - ~300-315,000 MWhs
Though the sun shines everywhere, solar generation is not economical in all regions of the country.
Solar Initiative-Ameren Headquarters

Approximately 100 kW of various PV technologies

- Mono-crystalline
- Poly-crystalline
- Thin film
- Bifacial

Website display with real time generation
Ameren Missouri
Hydroelectric Facilities

Keokuk
137 MW
Annual production ~900,000 -1,000,000 MWhs
Meets MO state RES for compliance

Osage
234 MW
Unit sizes do not qualify for RES

Taum Sauk
440 MW
Pump storage does not qualify for RES
Biomass Study

Working with University of Missouri-Columbia on evaluation of biomass feedstock for co-firing; predominately at Sioux plant (cyclone boiler)

Corn stover primary fuel

5% coal displacement requires approximately 200,000 tons of stover or 175,000 tons pelletized

10-20% less heating value than PRB coal

Delivered pricing $3-$5/mmBtu

Early engineering data suggests significant capital cost for required modifications at the plant for fuel handling and storage systems
Supply potential for biomass
Methane to Megawatts

Agreement with IESI (originally Fred Weber Inc.)

Landfill gas development - 3 Solar

  4.9 MW Mercury 50 gas turbines

Anticipated generation:

  96,000-100,000 MWhs annually

Operational - Summer, 2012
SMALL MODULAR REACTOR (SMR)

Major Clean Energy Economic Development Opportunity for Missouri
Benefits of a SMR

- Cleaner energy portfolio
- SMRs employ enhanced safety/robustness
- Smaller size; lower overall cost; reduced construction period
- Modular components built in a modern factory setting and installed module by module
- Transformational economic development opportunity
  - Global hub for design, manufacturing and training
SMRs: Unprecedented Statewide Support

- Every electric provider in Missouri (IOUs, co-ops, munis) is working with Westinghouse to bring SMR development and manufacturing to Missouri

- Extensive broad-based support in Missouri (bipartisan state & federal legislators, local & international labor, University of Missouri System, business, etc.)

- In November 2012, DOE awarded initial funding under program to Mpower/TVA Alliance

- Additional funding opportunity currently being assessed

Nationally:

- 20,000 jobs
- $25 billion economic impact

SMRs
A perfect fit for Missouri – and with sensible regulations, our infrastructure will be ready to support it.
CUSTOMER FOCUSED
Energy Efficiency

• Customers want more tools to manage their energy usage

• In early 2012, Ameren Missouri sought approval from the MPSC for the largest energy efficiency program in the state’s history

• Consistent with Missouri law, request included modernization of the regulatory framework to support investment in energy efficiency programs

• MPSC approved programs and modernization of framework in 2012

• Program Overview

  • Three-year program

  • $145 million total investment
Portfolio of Energy Efficiency Programs

Residential
- Lighting
- Energy Efficient Products
- HVAC
- Refrigerator Recycling
- Home Energy Performance (HEP)
- Energy Star New Homes
- Low Income

Business
- Standard Incentive
- Customer Incentive
- Retro-Commissioning
- New Construction
Energy Efficiency

- Extensive awareness campaign is being implemented
- Customer benefits
  - Approximately 800,000,000 kWh expected energy savings
  - Estimated customer benefits of approximately $500 million over 20 years
- State of Missouri Benefits
  - Cleaner air
  - Job creation
- Ameren Missouri Benefits
  - Enhanced framework aligns incentives to support EE programs
  - Timely recovery of program costs
- Win-Win
WHAT IS NET METERING?

A process in which a customer can interconnect a solar or wind generator in parallel with Ameren Missouri’s distribution system and can be credited for the generation that is supplied to the system.
A Way Forward to Secure Missouri’s Energy and Economic Future

ISRS: Infrastructure Strengthening and Regulatory Streamlining
ISRS Key Objectives

- Modernize current energy policies to support additional investment in the state’s aging energy infrastructure
- Take important steps to meet Missouri’s future energy needs and expectations
- Streamline regulations, but maintain strong oversight
- Create good paying jobs – Now!
ISRS is the Missouri Solution modeled largely after policies that have worked for a decade for gas and water utilities.

Passed in 2003 to help Missouri:

- Address aging infrastructure needs
- Improve customer reliability
- Create investment and jobs
- Maintain strong oversight and consumer protections
- Better compete with surrounding states
Other States Are Moving Ahead With Better Investment Policies

Legend

- Strongly supportive policies
- Moderately supportive policies
- Minimally supportive policies

Source: Edison Electric Institute, Pacific Economics Group Research and Ameren analysis.
An Excellent Time to Move Forward

• Interest rates are at historic lows

• An ample supply of skilled labor is ready to go, which will help drive project costs lower

• Hundreds of Missouri suppliers of goods and services are ready to go; driving down project costs

• The state needs sustainable good paying jobs, now!

• Modernizing our energy infrastructure is a big job

• Consistent with leadership's priorities in legislature