# DEMAND-SIDE MANAGEMENT MARKET POTENTIAL STUDY

*Volume 6: Demand-Side Rates Analysis*

## Final Report

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*Prepared for:*
Ameren Missouri

*Presented on:*
December 20, 2013

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# INTRODUCTION

Ameren Missouri commissioned this Demand Side Management (DSM) Market Potential Study to assess the various categories of electrical energy efficiency (EE), demand response (DR), and distributed generation/combined heat and power (DG/CHP) potentials in the residential, commercial, and industrial sectors for the Ameren Missouri service area from 2016 to 2033. This study uses updated baseline estimates based on the latest information pertaining to federal, state, and local codes and standards for improving energy efficiency. It also quantifies and includes estimates of naturally occurring energy efficiency in the baseline projection.

Ameren Missouri will use the results of this study in its integrated resource planning process to analyze various levels of energy efficiency related savings and peak demand reductions attributable to both EE and DR initiatives at various levels of cost. This study also provides estimated levels of combined heat and power (CHP) and distributed generation (DG) installations over the specified time horizon. Furthermore, Ameren Missouri has adhered to both the Missouri Public Service Commission ("Commission") rules, 4 CSR 240-3.164 regarding potential study requirements for purposes of complying with the Missouri Energy Efficiency Investment Act (MEEIA) and 4 CSR 240-22 regarding potential study requirements for Ameren Missouri's next Integrated Resource Plan (IRP) to be filed in April 2014. Both rules contain new provisions that were not part of Ameren Missouri's previous DSM Potential Study published in 2010.

Ameren contracted with EnerNOC Utility Solutions Consulting (EnerNOC) to conduct this study and EnerNOC has performed the following tasks to meet Ameren's key objectives:

- Conducted primary market research to collect data for the Ameren Missouri service territory, including: electric end-use data, saturation data, and customer demographics and psychographics.
- Characterized how customers in the Ameren Missouri service territory make decisions related to their electric use and energy efficiency investment decisions. Translated that understanding in a clear and transparent manner to establish annual market acceptance rates for EE measures.
- Employed updated baselines that reflect both current and anticipated federal, state, and local energy efficiency legislation. Identify all known pending legislation that may also impact DSM potential.
- Developed Ameren Missouri-specific market acceptance rates for EE for the planning cycle of 2016 through 2034 that, when applied to economic potential, will yield estimates of maximum achievable and realistic achievable potential.
- Analyzed the potential for energy efficiency, demand response, and customer distributed generation/combined heat and power application over the 2016-2033 planning horizon[1].
- Worked with Ameren Missouri to develop sensitivity analyses for assessing uncertainty around DSM potential.
- Analyzed the impact of demand-side rates on DSM potential.
- Provided a series of webinars for Missouri stakeholders to review study assumptions and provide comments for consideration.

[1] Although estimates were developed through 2034, we show results for 2033, which is 20 years out from the start of the forecast in 2014.

- Clearly communicated the DSM potential and uncertainty in an objective way that is useful for the Commission, Ameren senior management, Missouri stakeholders, Ameren DSM staff, Ameren EE Implementation team, and Ameren IRP staff – both operational and planning. This includes the following:
    - Documented compliance with IRP/MEEIA rule references, including specific references to rule requirements.
    - Provided measure-level information, in a way that is readily compatible with Ameren Missouri's modeling methodology in DSMore.
    - Generated energy efficiency potential supply curves, which clearly show the incremental cost (in dollars per kWh) of increasing DSM energy efficiency efforts (in kWh) over the 2016-2033 planning horizon.
    - Generated demand response potential supply curves, which clearly show the incremental cost (in dollars per kW) of increasing DSM demand response efforts (in kW) over the 2016-2033 planning horizon.
    - Generated distributed generation/combined heat and power potential supply curves, which clearly show the incremental cost (in dollars per kW) of increasing DG/CHP efforts (in kW) over the 2016-2033 planning horizon.

## Report Organization

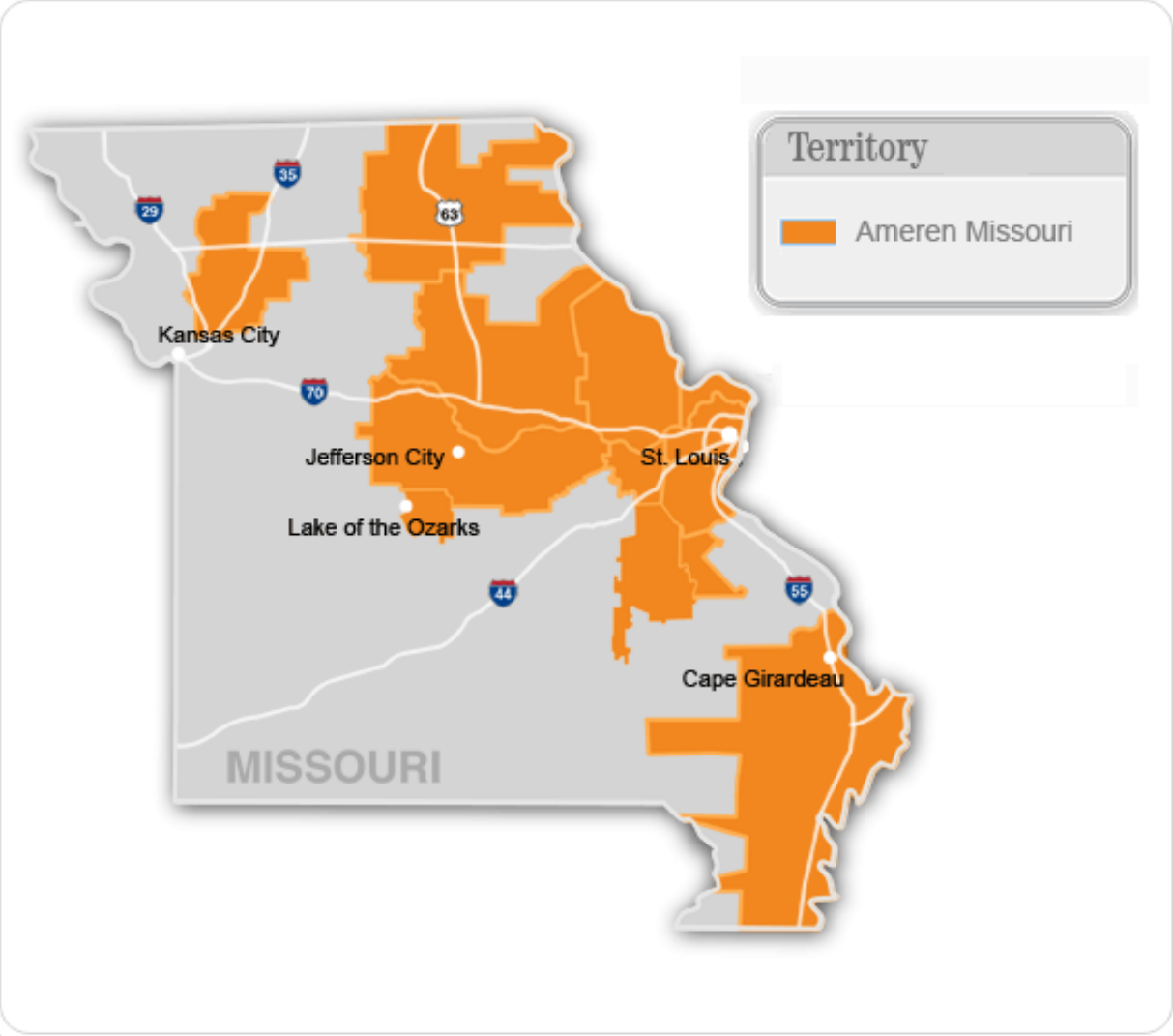
This report is presented in 5 volumes as outlined below. This document is **Volume 3: Energy Efficiency Analysis**.

- Volume 1, Executive Summary
- Volume 2, Market Research
- Volume 3, Energy Efficiency Analysis
- Volume 4, Demand Response Analysis
- Volume 5, Distributed Generation Analysis
- Volume 6, Demand-side Rates Analysis

## Background

Ameren Corporation is a large investor-owned utility serving large parts of Missouri and Illinois. Figure 1-1 below presents Ameren Missouri's service territory.

*Figure 1-1 Ameren Missouri Service Territory*




## Ameren Missouri DSM Overview

The Missouri Rules of the Department of Economic Development (4 CSR 240-22) require that electric utilities in Missouri prepare an integrated resource plan (IRP) that "[c]onsider[s] and analyze[s] demand-side efficiency and energy management measures on an equivalent basis with supply-side alternatives in the resource planning process." per Section 4 CSR 240-22.010(2)(A). Section 4 CSR 240-22.050 prescribes the elements of the demand-side analysis, including reporting requirements. A copy of the Missouri rules governing electric utility resource planning is available on the Missouri Secretary of State's website. Details of the Missouri Energy Efficiency Investment Act (MEEIA) are available on the Missouri Public Service Commission website.

Over the past several years, Ameren Missouri has been implementing EE programs and analyzing EE as a long-term resource option. From 2009 through September, 2011, Ameren Missouri implemented full-scale EE programs including five residential and four business programs.

Ameren Missouri spent approximately $70 million on energy efficiency programs between 2009 and 2011 and achieved approximately 550,000 MWH of verified energy savings. This level of expenditure resulted in deployment of approximately:

- 4 million CFLs
- 21,000 Energy Star® appliances

- 12,000 Multi-Family Income Qualified (“MFIQ”) tenant units
- 9,000 decommissioned refrigerators and freezers
- 3,000 new residential central air conditioning systems
- 3,000 business projects

In 2012, Ameren Missouri scaled back its energy efficiency expenditures to $10 million due to uncertainty regarding regulatory framework issues for its next cycle of energy efficiency programs. Concurrently, in January 2012, Ameren Missouri filed its first 3-year EE implementation plan under the new Missouri rules implementing MEEIA.

CHAPTER | 2

# POTENTIAL IMPACT OF DEMAND-SIDE RATES

The file “Demand Side Rates for Ameren Missouri – Final Report.pptx” presents the results of the demand-side rates completed by The Brattle Group.

Demand Side Rates for Ameren Missouri -

## About EnerNOC

EnerNOC's Utility Solutions Consulting team is part of EnerNOC's Utility Solutions, which provides a comprehensive suite of demand-side management (DSM) services to utilities and grid operators worldwide. Hundreds of utilities have leveraged our technology, our people, and our proven processes to make their energy efficiency (EE) and demand response (DR) initiatives a success. Utilities trust EnerNOC to work with them at every stage of the DSM program lifecycle – assessing market potential, designing effective programs, implementing those programs, and measuring program results.

EnerNOC's Utility Solutions deliver value to our utility clients through two separate practice areas – Implementation and Consulting.

- Our Implementation team leverages EnerNOC's deep "behind-the-meter expertise" and world-class technology platform to help utilities create and manage DR and EE programs that deliver reliable and cost-effective energy savings. We focus exclusively on the commercial and industrial (C&I) customer segments, with a track record of successful partnerships that spans more than a decade. Through a focus on high quality, measurable savings, EnerNOC has successfully delivered hundreds of thousands of MWh of energy efficiency for our utility clients, and we have thousands of MW of demand response capacity under management.
- The Consulting team provides expertise and analysis to support a broad range of utility DSM activities, including: potential assessments; end-use forecasts; integrated resource planning; EE, DR, and smart grid pilot and program design and administration; load research; technology assessments and demonstrations; evaluation, measurement and verification; and regulatory support.

The team has decades of combined experience in the utility DSM industry. The staff is comprised of professional electrical, mechanical, chemical, civil, industrial, and environmental engineers as well as economists, business planners, project managers, market researchers, load research professionals, and statisticians. Utilities view EnerNOC's experts as trusted advisors, and we work together collaboratively to make any DSM initiative a success.

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