

THE
CADMUS
GROUP, INC.

**State of Missouri MDNR-DE
Missouri Energy Stakeholder
Process
Traditional Energy Sources
Meeting**

**10/27/2011
The Cadmus Group**

The Cadmus Group, Inc.

- Established in 1983, premier energy and environmental consulting firm serving Federal & state agencies and energy utilities throughout North America
- More than 250 full-time, professional consultants in major offices in Watertown, MA, Washington, DC, Arlington VA, Portland, OR, and Boulder, CO
- Major practice areas include:
 - Energy policy, planning and forecasting
 - Utility integrated resource planning
 - Energy efficiency, demand response, renewable energy policy, planning, market assessment, program design and evaluation
 - Drinking water and water quality
 - Environmental assessment

Team Members

- The Cadmus Group
 - Paul Parker, Project Manager
 - Amy Ellsworth, Deputy PM
- RESOLVE
 - Adam Saslow, Lead facilitator
- GSM
 - Michele Wynne, COO
 - Robert Winters, Consulting Engineer

Introduction

Goals:

- Maintain competitive costs for Missourians
- Promote cleaner, greener economy that includes more renewable energy
- Provides strategies to achieve all cost-effective energy efficiency savings
- Achieve greater energy security through energy choices

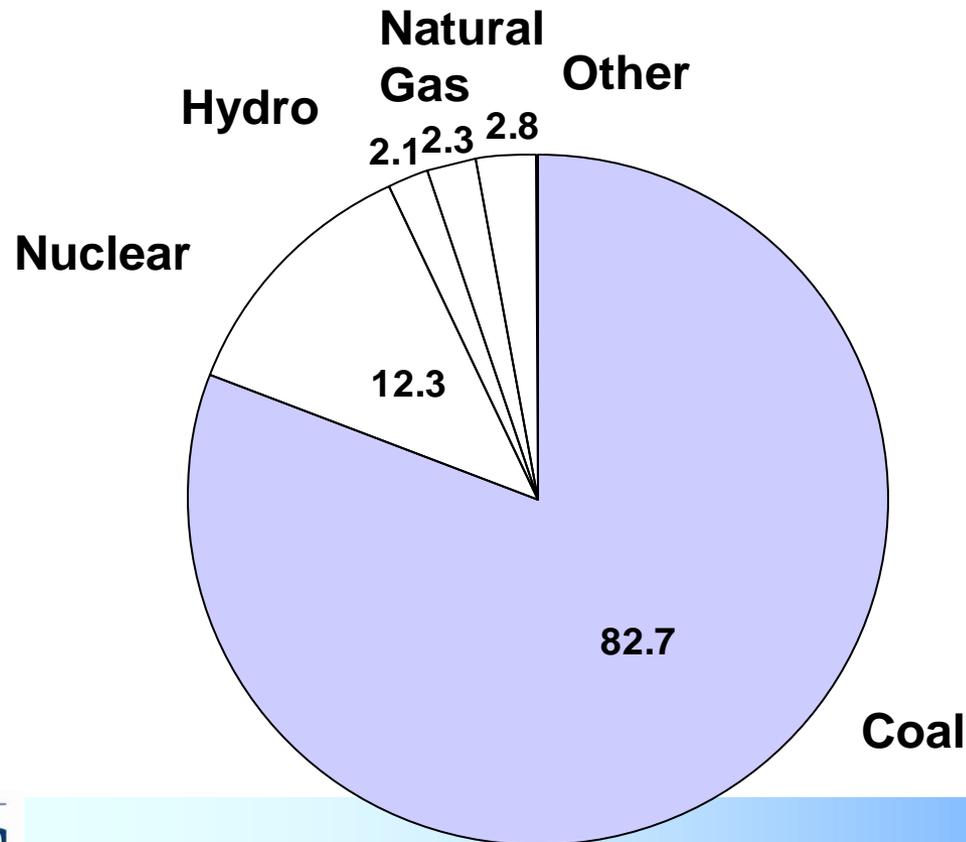
Introduction (cont)

Guidelines

- Energy efficiency should be a critical component
- The recommendations are viable and provide realistic options
- Enhance economic opportunities
- Consider all of Missouri's resources
- Address MDNR-DE role as a leader

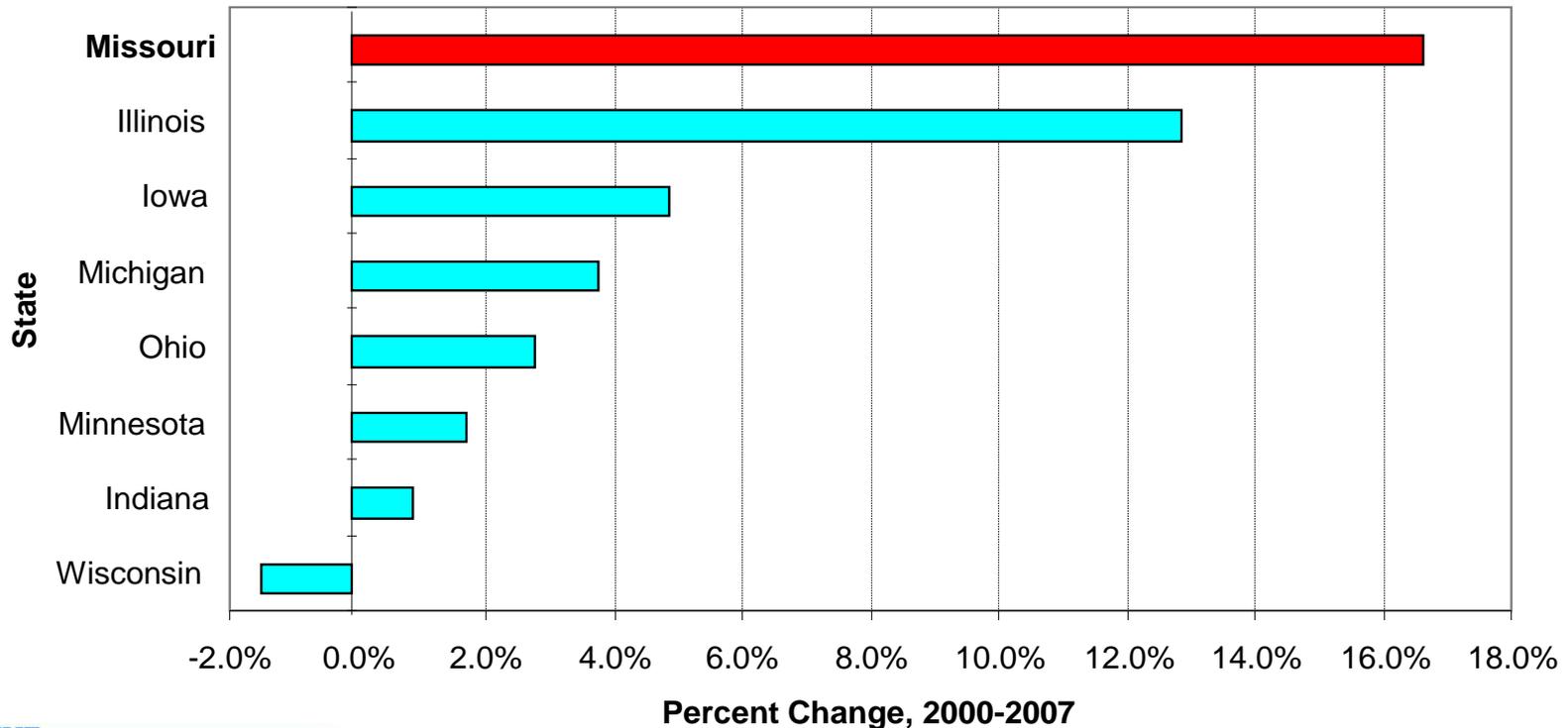
Goal: Achieve greater energy security through energy choices

Percentage of Electric Power Generation by Source for Missouri, 1990-2007



MISSOURI'S DEPENDENCE ON COAL INCREASED MORE THAN IN OTHER MIDWESTERN STATES

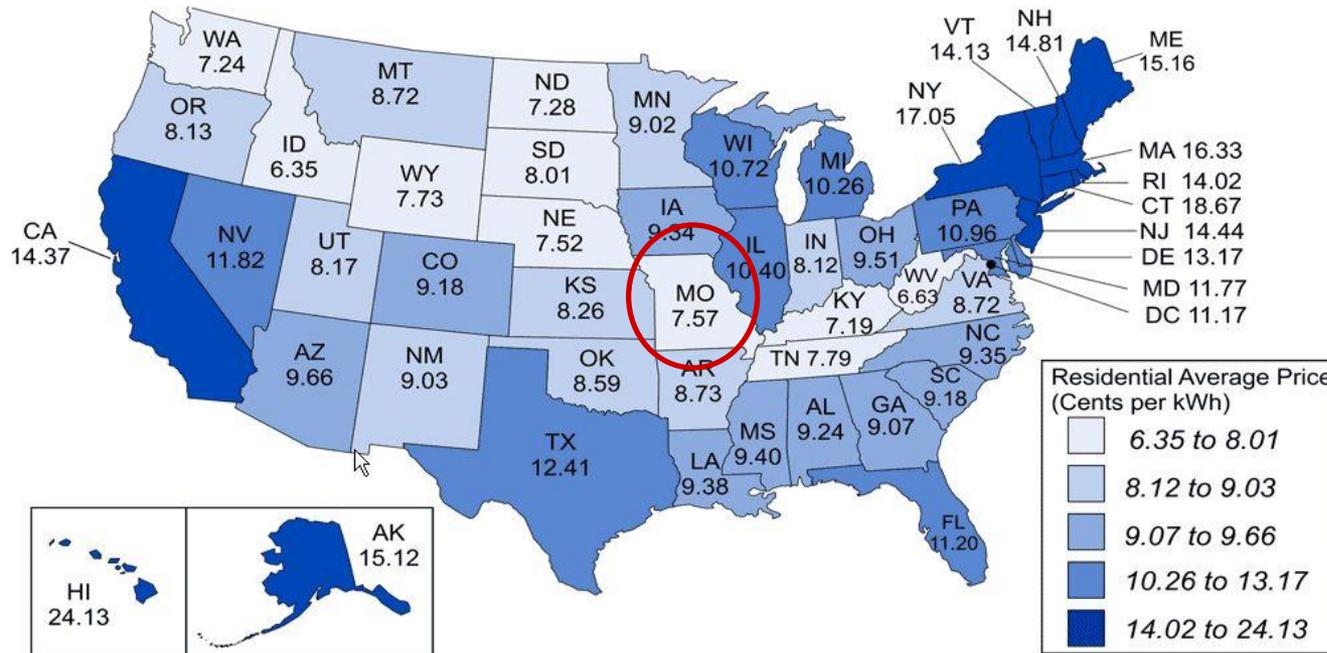
Percent Change in Coal Consumption to Generate Electricity,
Midwest States 2000-2007



Coal helps keep electricity costs low

The U.S. average residential retail price of electricity was 10.64 cents per kilowatt-hour in 2007.

- 7.35¢/kWh in 2009
- 9th lowest electricity cost per kWh in U.S.



Source: Energy Information Administration, Form EIA-826, "Monthly Electric Sales and Revenue with State Distributions Report."

But...

- The vast majority of the coal used in Missouri is brought in from other States
 - Coal reserves in the state are classified as high-sulfur coal
- Missouri had 50+ coal-fired generating units many are 40+ years old
- Environmental issues
- New plants are much more costly to build and take a long, long time
- Demand is growing

Regulatory Risk

- New federal clean air standards requires stricter emissions controls on coal fired generators
 - Installing the required technology will not be cost effective on some older generating units
 - Cost recovery is problematic
- New regs could increase electricity costs by double digits

Nuclear

- Second to coal in terms of electric generation
- Permit submitted to add a new unit to the Calloway facility was suspended in 2009
- Major barriers with acceptance
- Low emissions (but waste issues)
- New plants are costly to build and take a long, long time

Natural gas

- Increasing demands met through imports from other states and Canada
- Opportunity for growth with conversion from coal-fired plants
 - Construction costs lower
 - But, fuel prices are volatile

Where does the DNR fit?

- DNR - Division of energy has traditionally not been active in activities related to or conversations about traditional energy sources.
 - Should they be?
 - And if so, what should their role be?