

# Current & Future Issues of the Energy Industry

October 23, 2008

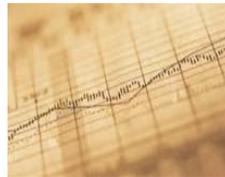
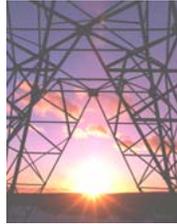




# The Midwest ISO's Role

## What We Do

- Provide Independent Transmission System Access
- Deliver Improved Reliability Coordination
- Perform Efficient Market Operations
- Coordinate Regional Planning
- Foster Platform for Wholesale Market Development

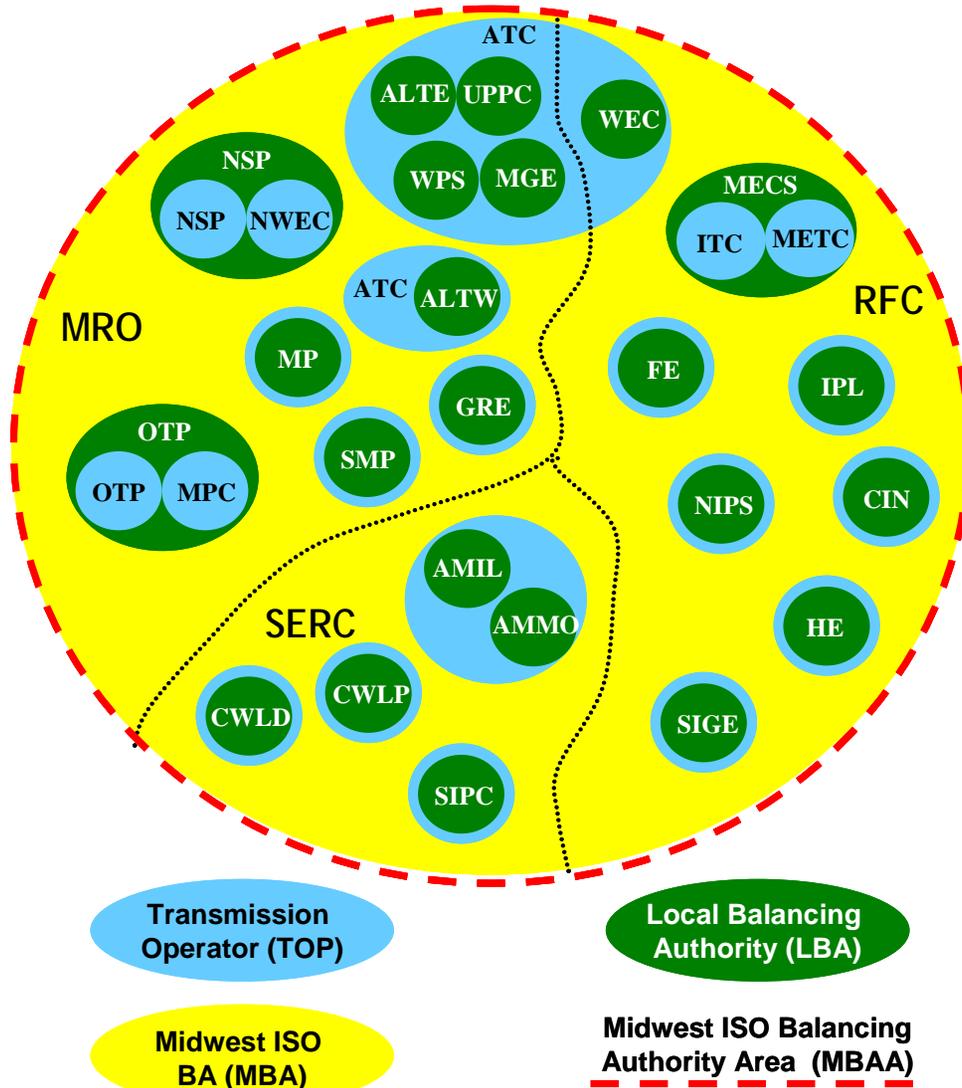


## Implications

- All parties have equal and non-discriminatory access
- Substantial regional reliability improvements
- Lower cost unit commitment, dispatch and congestion management
- Integrated system planning
- Encourage infrastructure investment and facilitate regulatory initiatives

# Midwest ISO

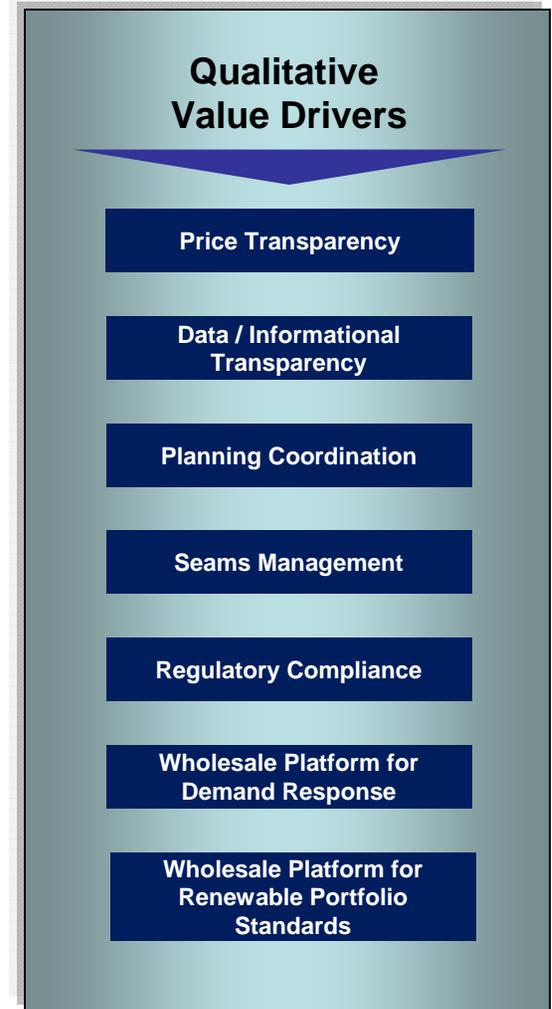
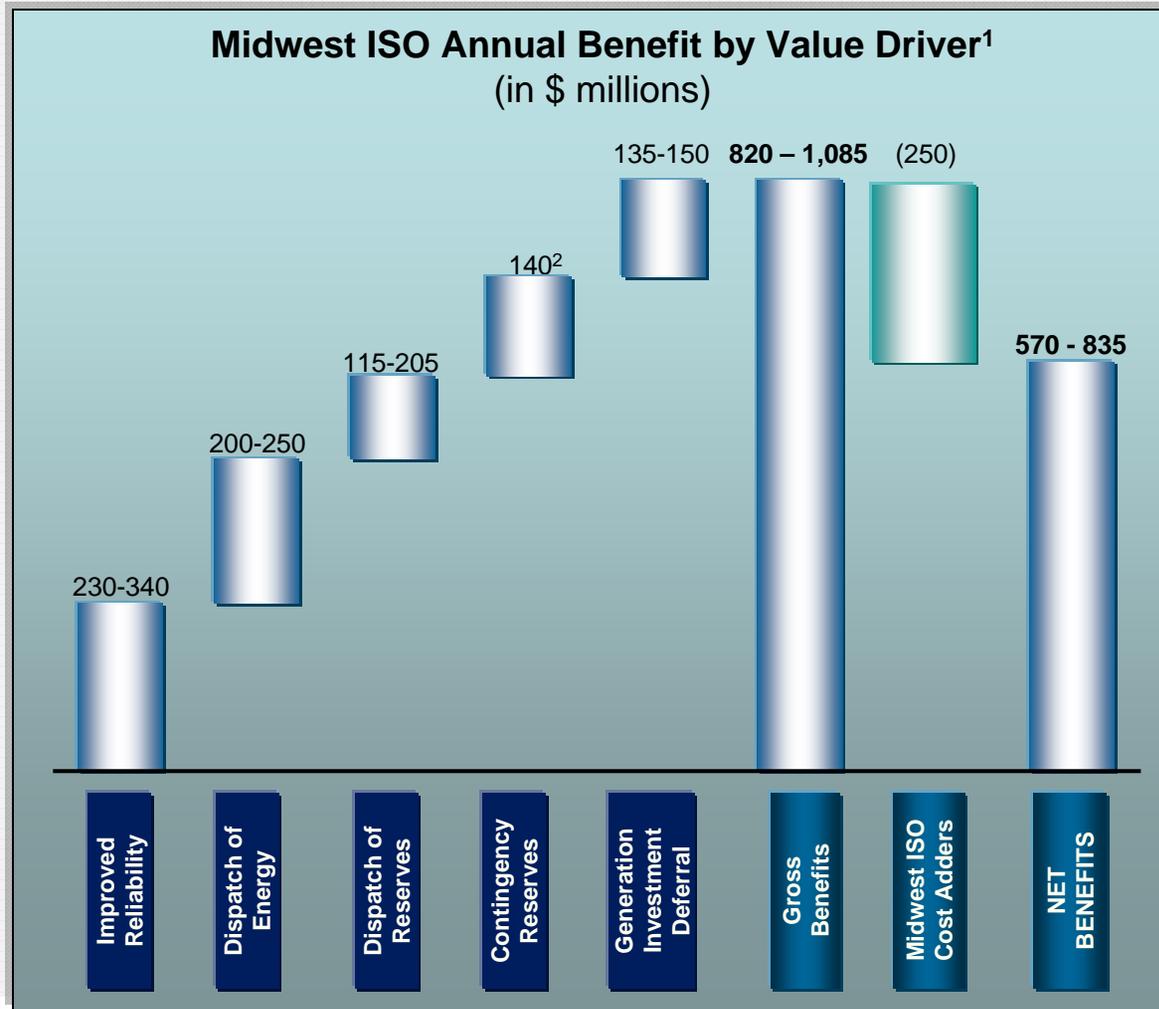
## 2008 / 2009 Reliability Management View



### 2008/2009 Reliability Monitoring

- 1 Balancing Authority – MISO (2009)
- State-of-the-Art System Visibility Tool Set
  - State Estimator
    - 250,000 data points
    - 15 seconds periodicity
  - Contingency Analysis
    - 8,500 contingencies
    - 2.5 minutes periodicity
  - Unit Dispatch System
    - Security-Constrained Dispatch
    - 5 minute periodicity
- Visibility extends into and beyond our first-tier neighbors

# Midwest ISO Value Proposition



<sup>1</sup> Figures shown reflect annual benefits and costs reflected in 2007 dollars

<sup>2</sup> As of 7/31/08, the 12-month rolling average savings = \$135 million

# Energy Industry of the Near Future

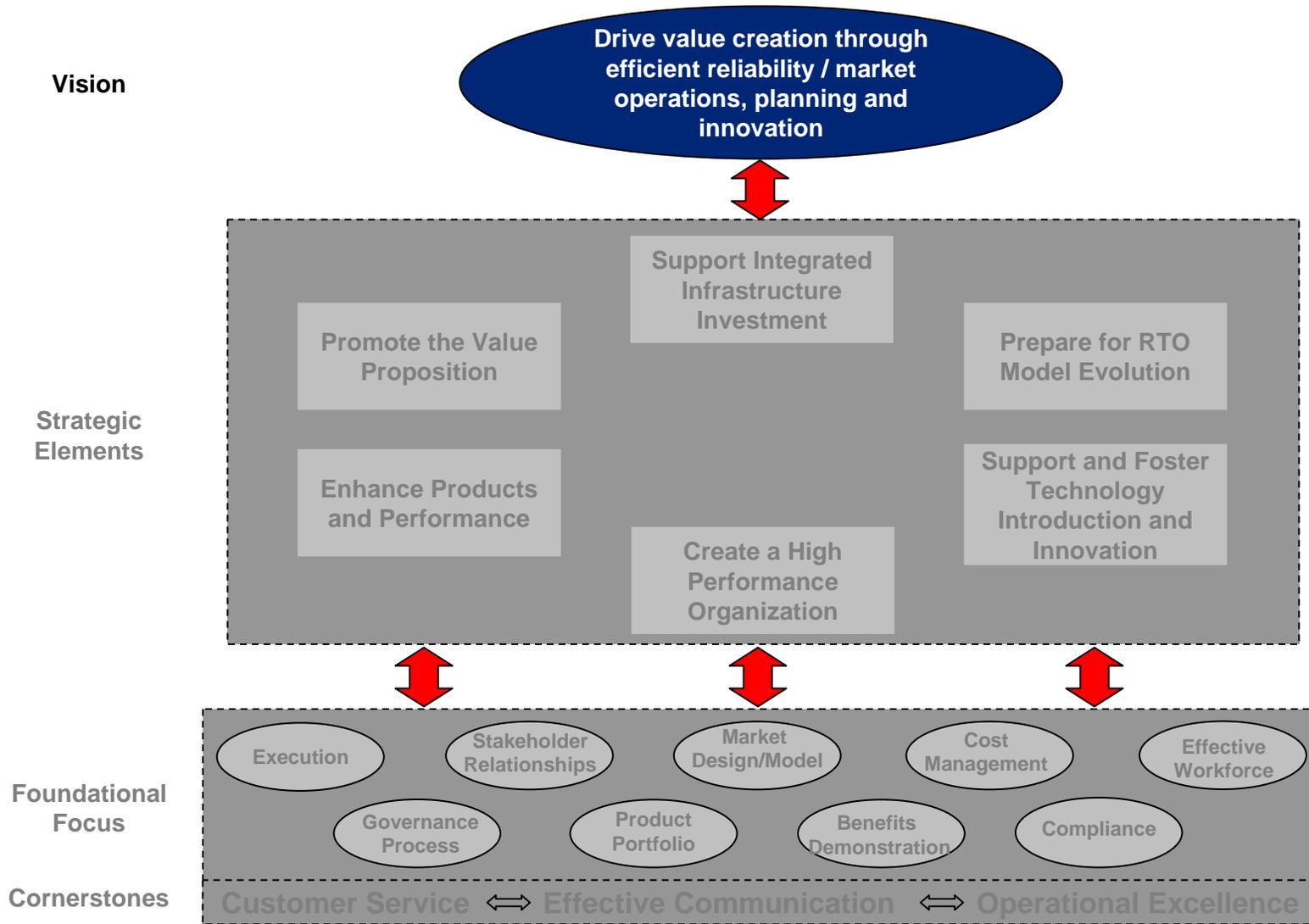
- Rapidly Increasing Prices
  - Fuel costs rising
  - Commodity costs rising
  - Environmental costs rising
  - Rate freezes ending
- Insufficient Infrastructure
  - Declining generation reserves
  - Aging generation plants
    - 40+ years = Average age of coal plants in Midwest ISO
  - \$1.3 Trillion<sup>1</sup> – Investment needed over next 15 years – nationally
    - \$600 Billion – Generation (267 GW)
    - \$210 Billion – Transmission
    - \$390 Billion – Distribution
    - \$60 Billion – Environmental (excluding CO2 retrofits)

<sup>1</sup> Source: Cambridge Energy Research Associates.

# Midwest ISO Response to that Future

- Strategic Plan
- Contingency Reserve Sharing Group (CRSG)
- Planning Reserve Sharing Group (PRSG)
- Ancillary Service Market (ASM)
- Resource Adequacy Requirement
- Infrastructure Planning
- Continuous Improvement

# Midwest ISO Strategy 2008 - 2012

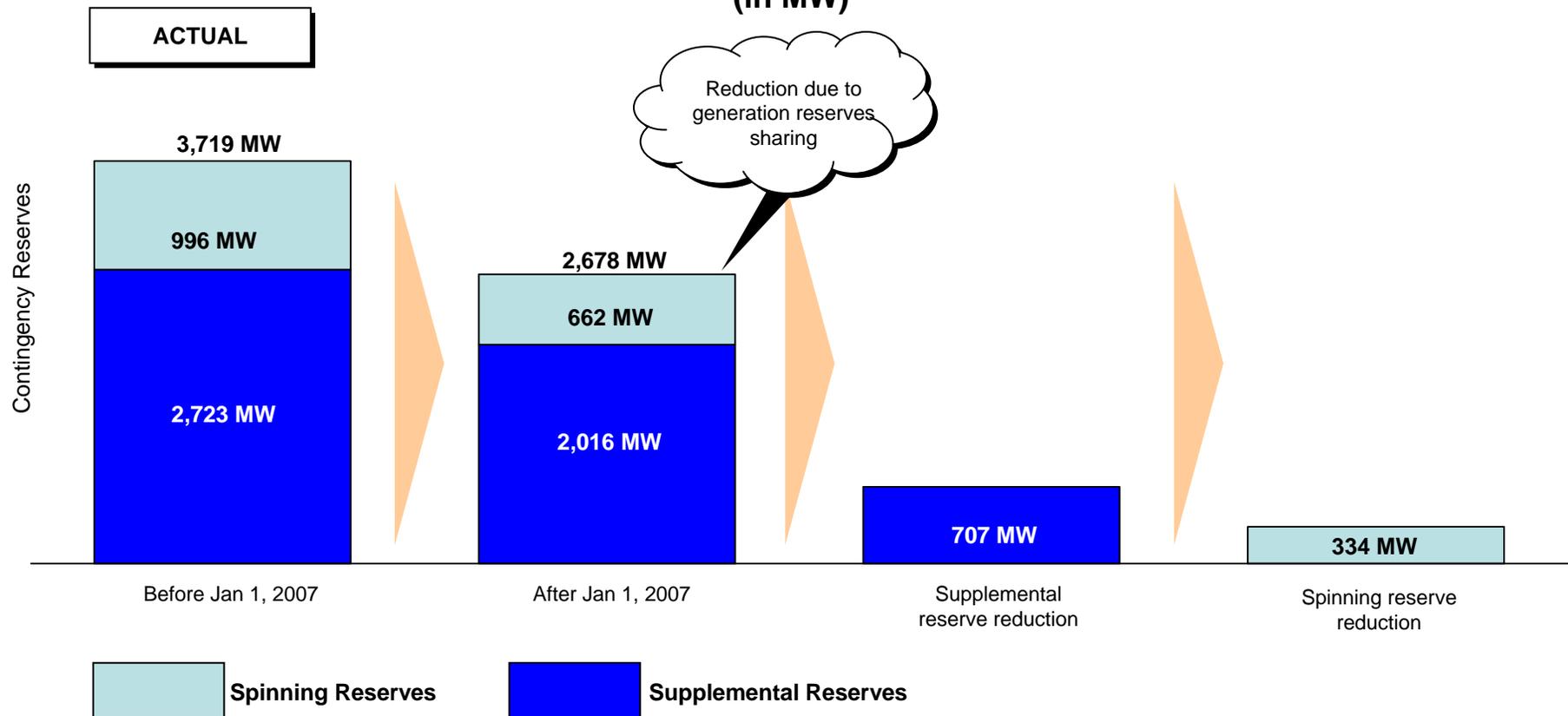


# Contingency Reserve Sharing Group (CRSG)

Formed January 1, 2007

Annual Savings of \$130 Million per year

Midwest ISO Contingency Reserves  
(in MW)



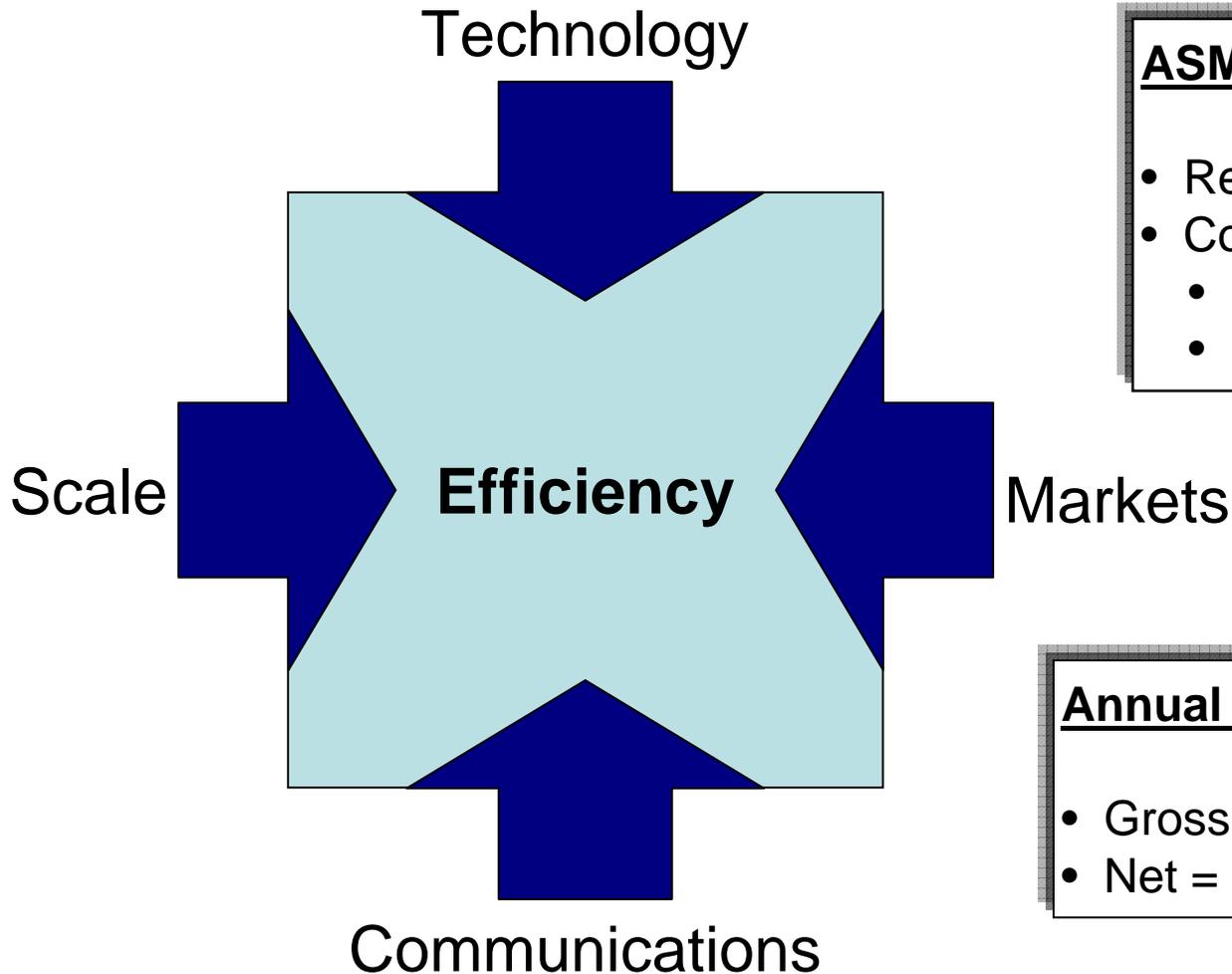
Source: Midwest ISO as reported by CRSG membership.

# Planning Resource Sharing Group (PRSG)

A reduction in the Planning Reserve Margin is enabled through the Midwest ISO's capacity pooling

- Potential annual benefit of \$135 to \$150 million
  - Calculated based on:
    - Planning Reserve Margin reduction of 1.00% to 1.25%
    - Avoided capacity cost of \$1,200 per KW (combined cycle gas fired generation)
    - Avoided cost benefit annualized using an estimated revenue requirement for the capital cost – 20 year asset life and 9.5% weighted average cost of capital

# Ancillary Services Market (ASM)



## ASM Products

- Regulation
- Contingency Reserves
  - Spinning
  - Supplemental

## Annual ASM Benefits<sup>1</sup>

- Gross = \$113 to \$208 Million
- Net = \$82 to \$177 Million

# Resource Adequacy Requirement

- Certainty
  - Set the requirement in conjunction with the States
- Efficiency
  - Use all available resources – Supply and Demand
- Accountability
  - Midwest ISO monitors the delivery of the required resources
  - States enforce the delivery of the required resources
- Maximize the Wholesale / Retail Partnership
  - Let the States do their part
  - No Capacity Market
- Climate Legislation
  - More baseload (coal) plant closures
  - Wind integration

# Infrastructure Planning

- Midwest ISO Transmission Expansion Plan (MTEP)
  - MTEP 2008 - Scheduled for BOD approval in December
    - \$5.7 billion in investments (\$4.8B in Appendix A)
    - 2,200 miles of new transmission (800+ miles of new 345 kV line)
    - While the projects largely target reliability concerns, over \$1 billion in annual economic benefit is expected
      - Production cost savings
      - Congestion cost savings
- Regional Generation Outlet Study (RGOS)
- Upper Midwest Transmission Development Initiative (UMTDI)
- Joint Coordinated System Plan (JCSP)

# Transmission Backbone of the Future – 765 kV

- High Thermal Capacities
  - Equivalent to six 345 kV lines
- Utilizes Less Land
  - Reduces right-of-way controversies
- Increased Efficiency
  - Reduced congestion costs
  - Reduced line losses (5% reduced to 1%)
- Cost Advantages
- Increased Operational Flexibility

# Future

- Challenging
- Increasingly Regional
  - While maximizing State roles
- Increased Technology Leverage
- Increased Communication Requirements
- Continued Active Stakeholder Participation is Critical
- Efficiency – a Priority