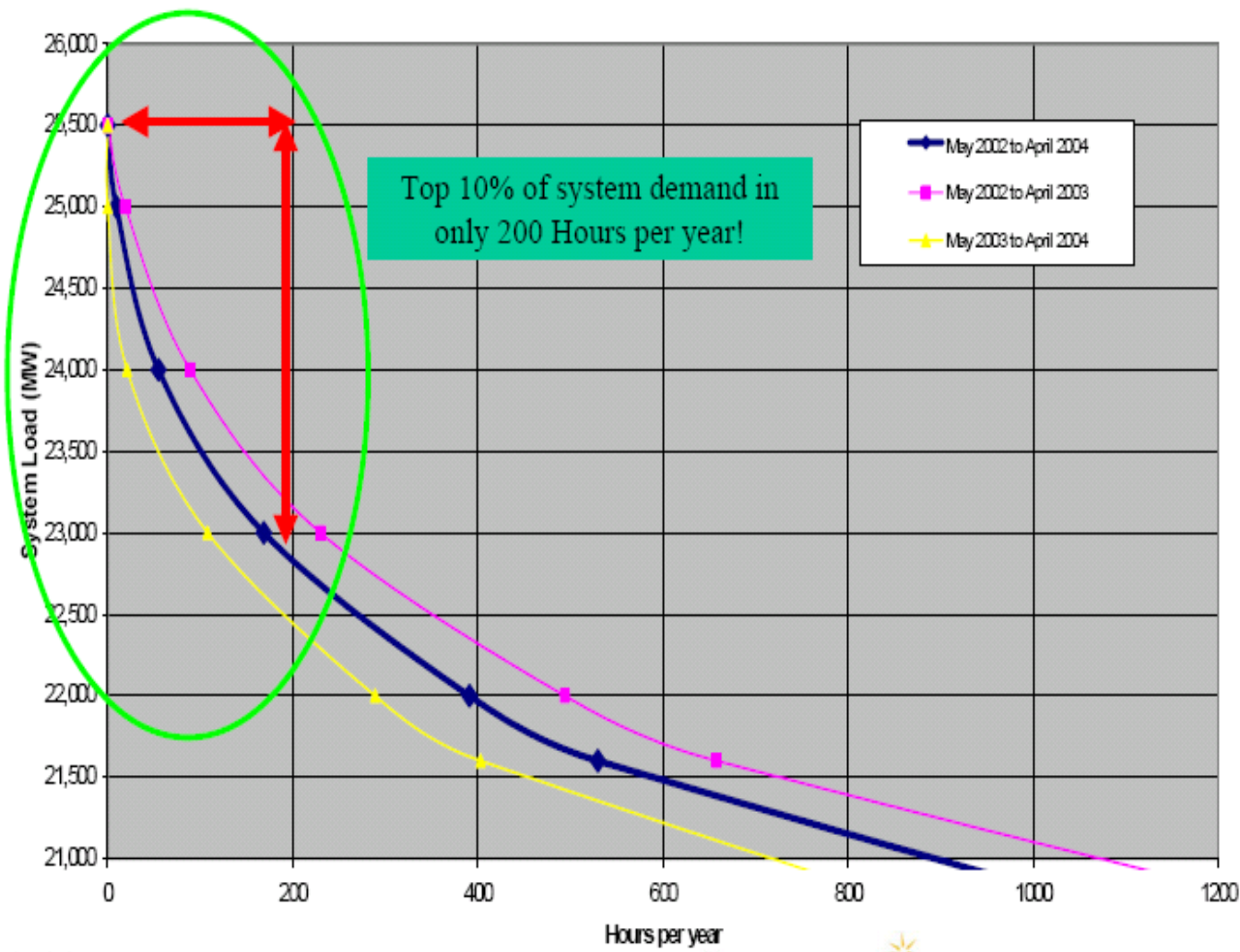


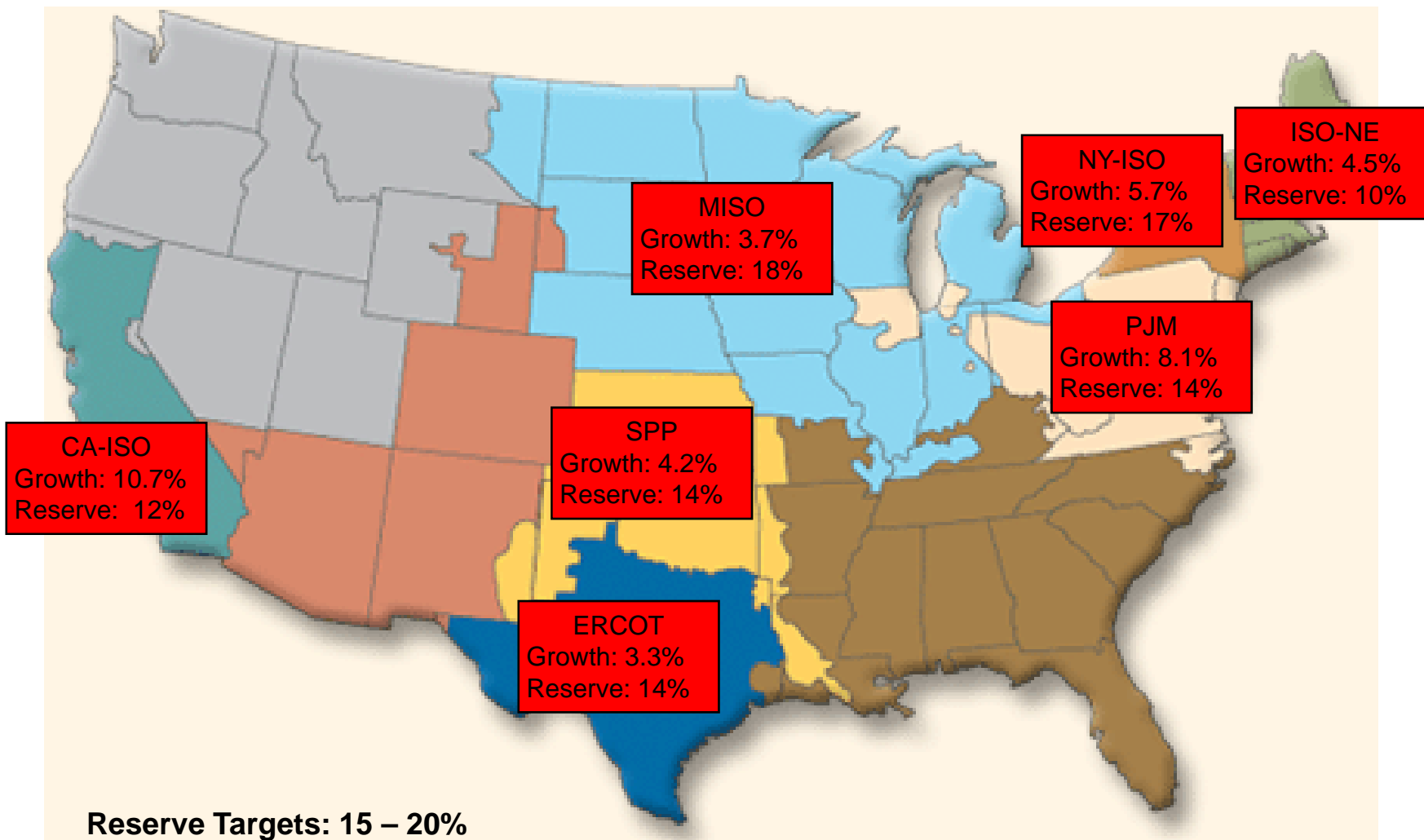
Demand Response Drivers: Short Term Focus, Long Term Vision



Knowledge 2008
October 17, 2008

- **Existing utility infrastructure strained by worsening load factor**
- **Peak demand continues to grow faster than supply**
 - Total energy 1.4%/Yr
 - System peak growing at 2%/Yr
 - Total supply dropped 0.1% in 2006
- **Demand response is the lowest total cost solution**
 - \$250-350/KW vs. \$700-850/KW for peak generation
 - Improved system reliability (reserve margin)
 - Reduced marginal supply costs
- **Emerging Technologies represent both opportunities and risk**
- **DR is a critical element of the smart grid**





Reserve Targets: 15 – 20%

Growth represents 2006 peak vs. previous record

➤ DR capacity deployment

- The mass market DR industry continues to grow with proven solutions
 - Ontario's 'conservation culture'
 - Minneapolis – 49% participation

➤ Intelligent Hardware

- Deploying hardware that is field 'upgradable'
- Bundling energy efficiency and reliability features

➤ Enterprise Software

- Security and reliability
 - NERC-CIP
- Full view of the grid
 - No Islands of technology



- **Improved return on DR investment**
 - Value/Cost
 - AMI networks bring promise
 - Avoid ‘bloody edge’
- **Multiple distribution channels**
 - Encourage customer investment
- **Leverage the customer’s installed equipment**
- **Communications and enterprise software opportunistic**
- **A integral part of the larger smart grid**
 - Auto-response for grid optimization



Q & A

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