

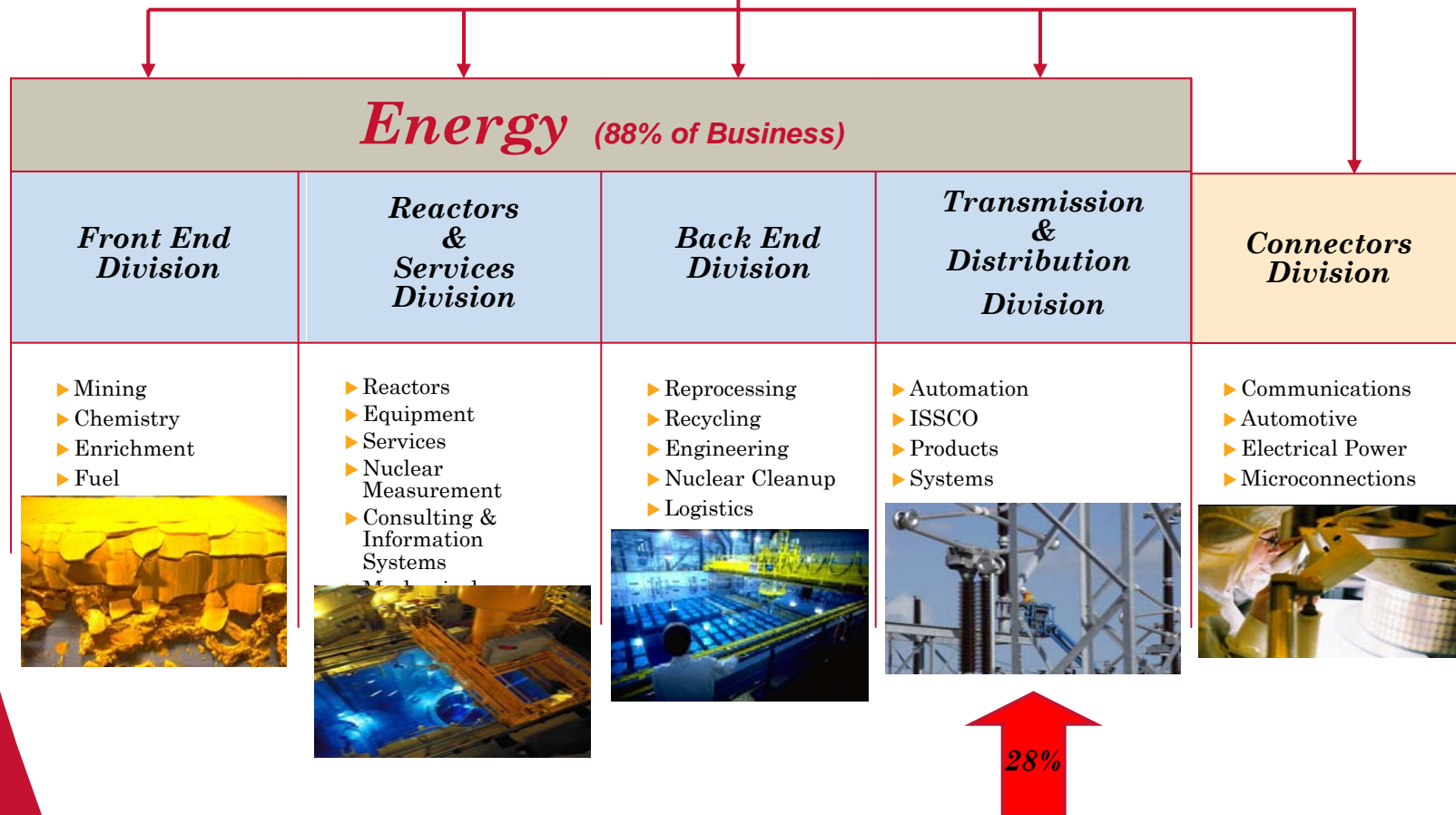
***Overview of AREVA T&D
Advanced Communication & Control Project
for Demand Response
funded by US Department of Energy***

***Presentation to NARUC
Energy Resources & Environment Committee
November 15, 2003***

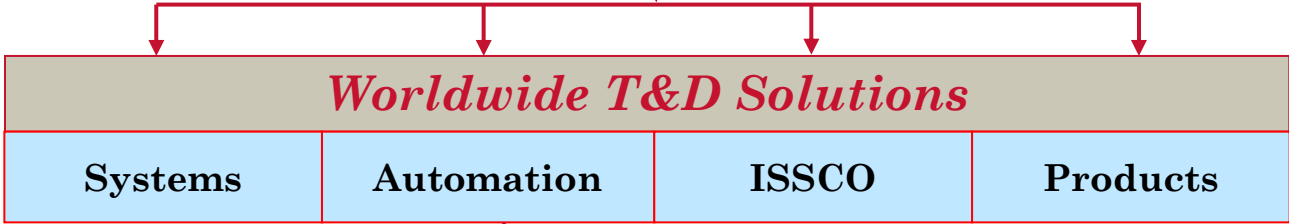
***Renee H. Guild
Director, Regulatory Affairs & Emerging Markets
AREVA T&D Corporation***

Organization of the Group

- ▶ \$11B Revenue
- ▶ 75,000 Employees



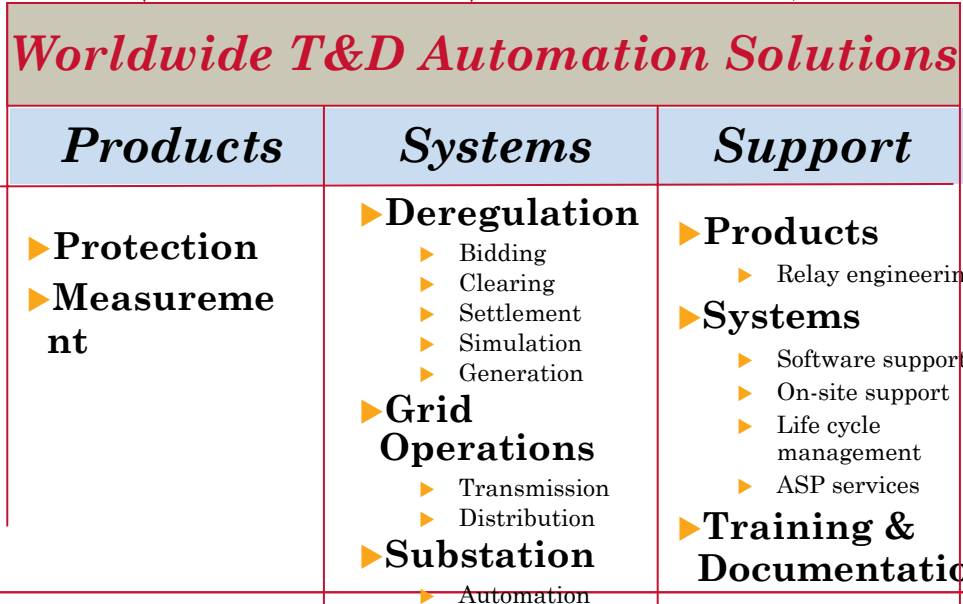
AREVA T&D



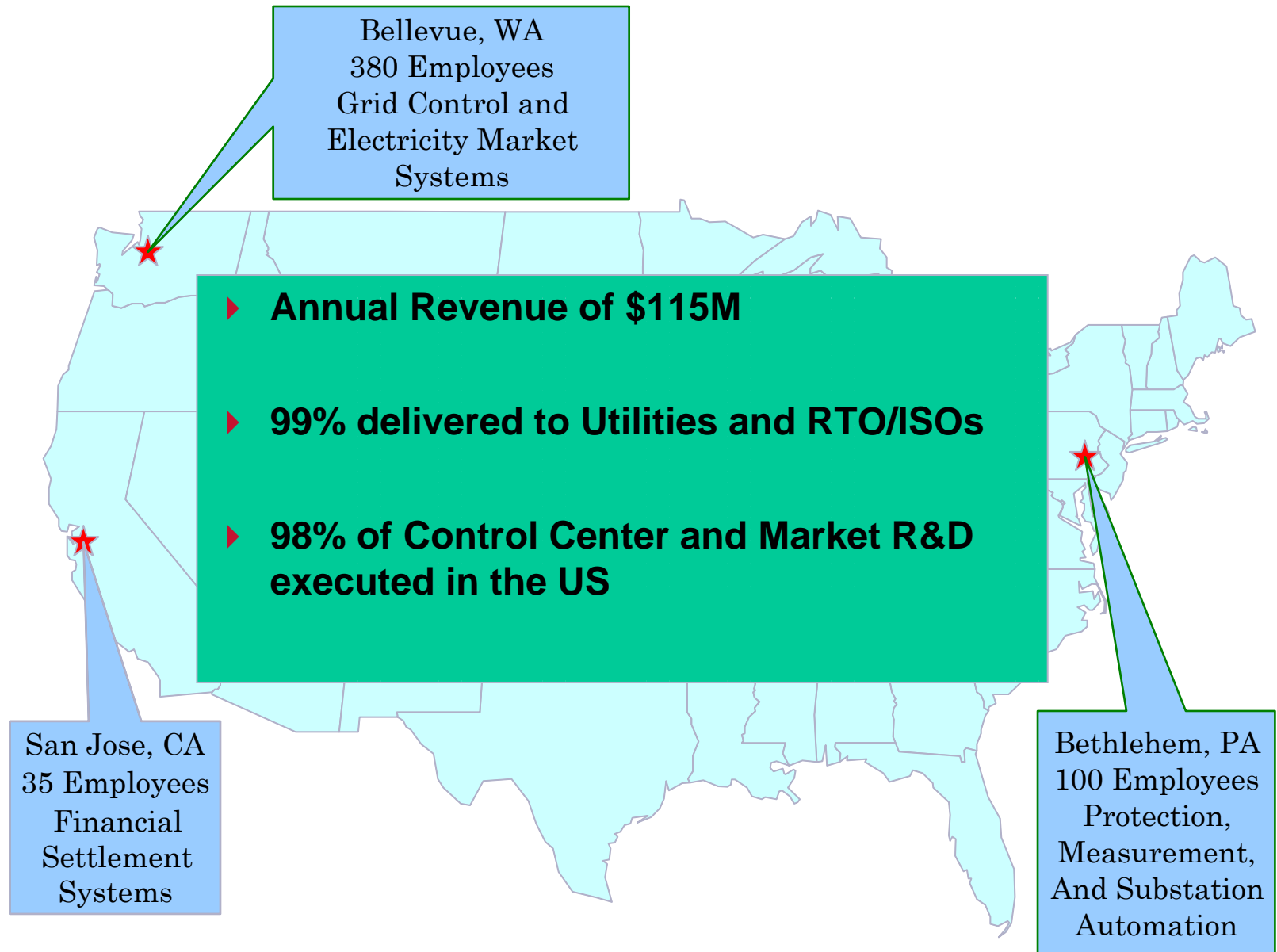
- ▶ Distributed Energy
- ▶ Power Distribution
- ▶ Power Electronics
- ▶ Substations (turn-key)

- ▶ Sales
 - ▶ Key Accounts
 - ▶ Channels
- ▶ Services
- ▶ Shared Functions
- ▶ Business Development







- ▶ Circuit Breakers
- ▶ Disconnect Switches
- ▶ Distribution Transformers
- ▶ Gas Insulated Substations
- ▶ Generator Circuit Breakers
- ▶ Instrument Transformers
- ▶ Power Transformers



T&D Automation's US Footprint

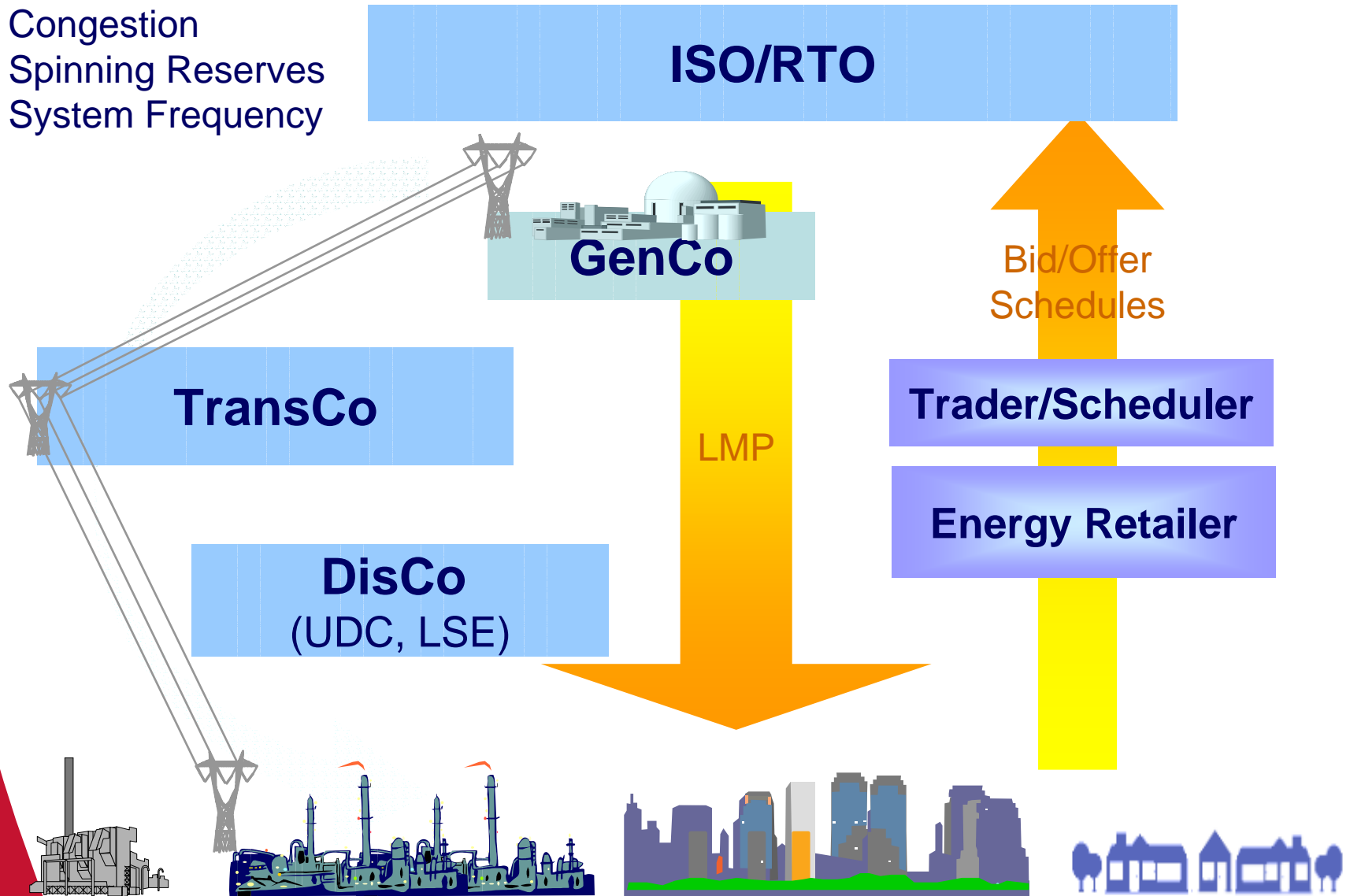


Supplier to US RTOs/ISOs

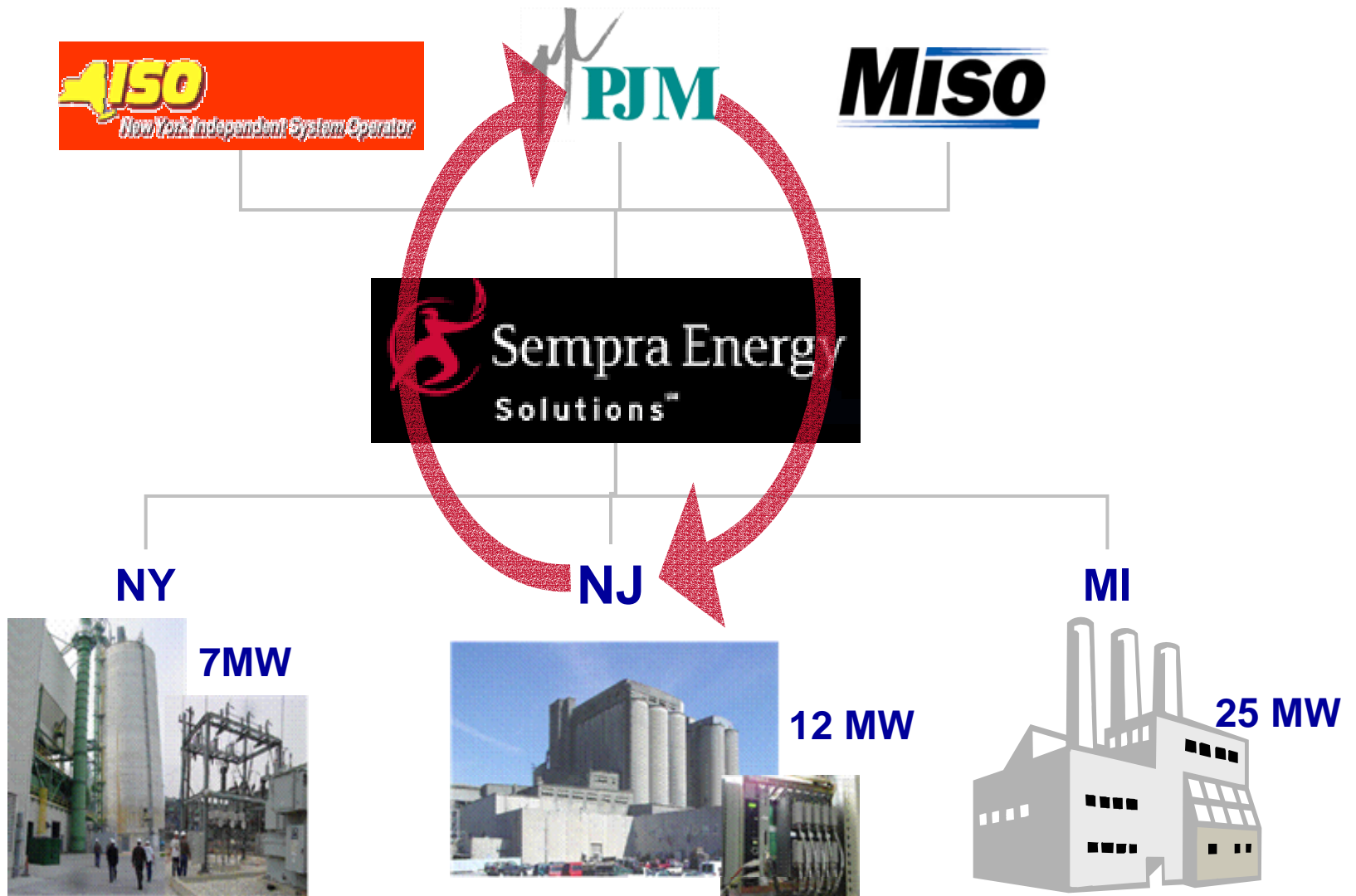
RTO/ISO	Transmission Management	Bidding & Publishing	Market Management	Market Settlement
	Other	Other	Other	AREVA
	AREVA	AREVA	AREVA	Other
	AREVA	AREVA	AREVA	Other
	AREVA	AREVA	AREVA	Other
	Other	Other	Other	Other
	Other	AREVA	AREVA	Other
Southwest Power Pool	AREVA	AREVA	AREVA	Other

Information Exchange Landscape

- Congestion
- Spinning Reserves
- System Frequency



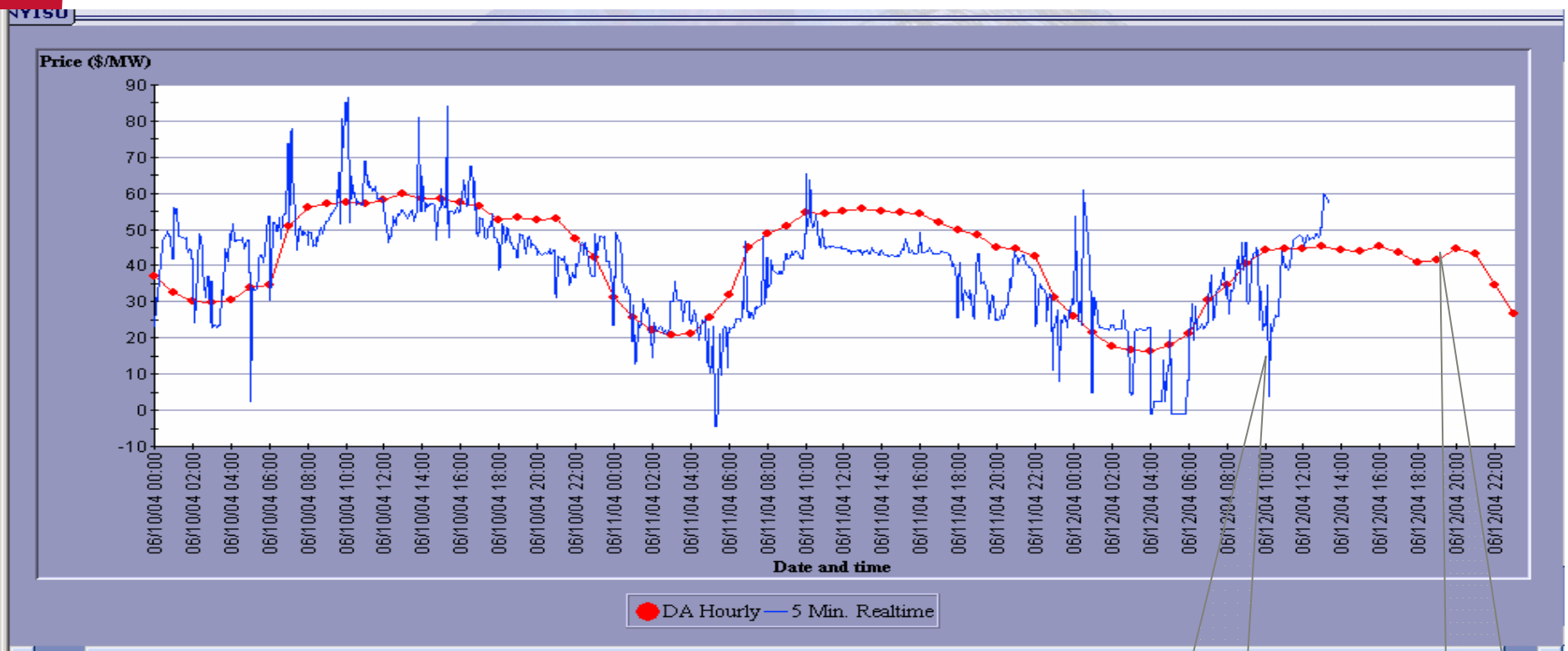
Proof of Concept Demonstration A DoE Project



RealTime Dashboard - Microsoft Internet Explorer

No	Row Description	Regional Operator	Zone	Price Date/Time	Last Price	Usage Date/Time	Last Usage
1	PJM PS Zone RT LMP	PJM	PSEG	06/10/2004 15:57	58.90 ↑	06/10/2004 13:39	5.07
2	PJM PPL Zone RT LMP	PJM	PPL	06/10/2004 15:57	60.60 ↑		
3	NYISO LMP	NYISO	G - HUD VL	06/10/2004 16:23	65.04 ↑		
4	ERCOT Balancing MCP	ERCOT	NORTH2004	06/10/2004 14:15	62.36 ↓		
5	ERCOT Balancing MCP	ERCOT	WEST2004	06/10/2004 14:30	62.58 ↑		
6	ERCOT Balancing MCP	ERCOT	SOUTH2004	06/10/2004 14:30	62.58 ↑		

Demand In the Zone



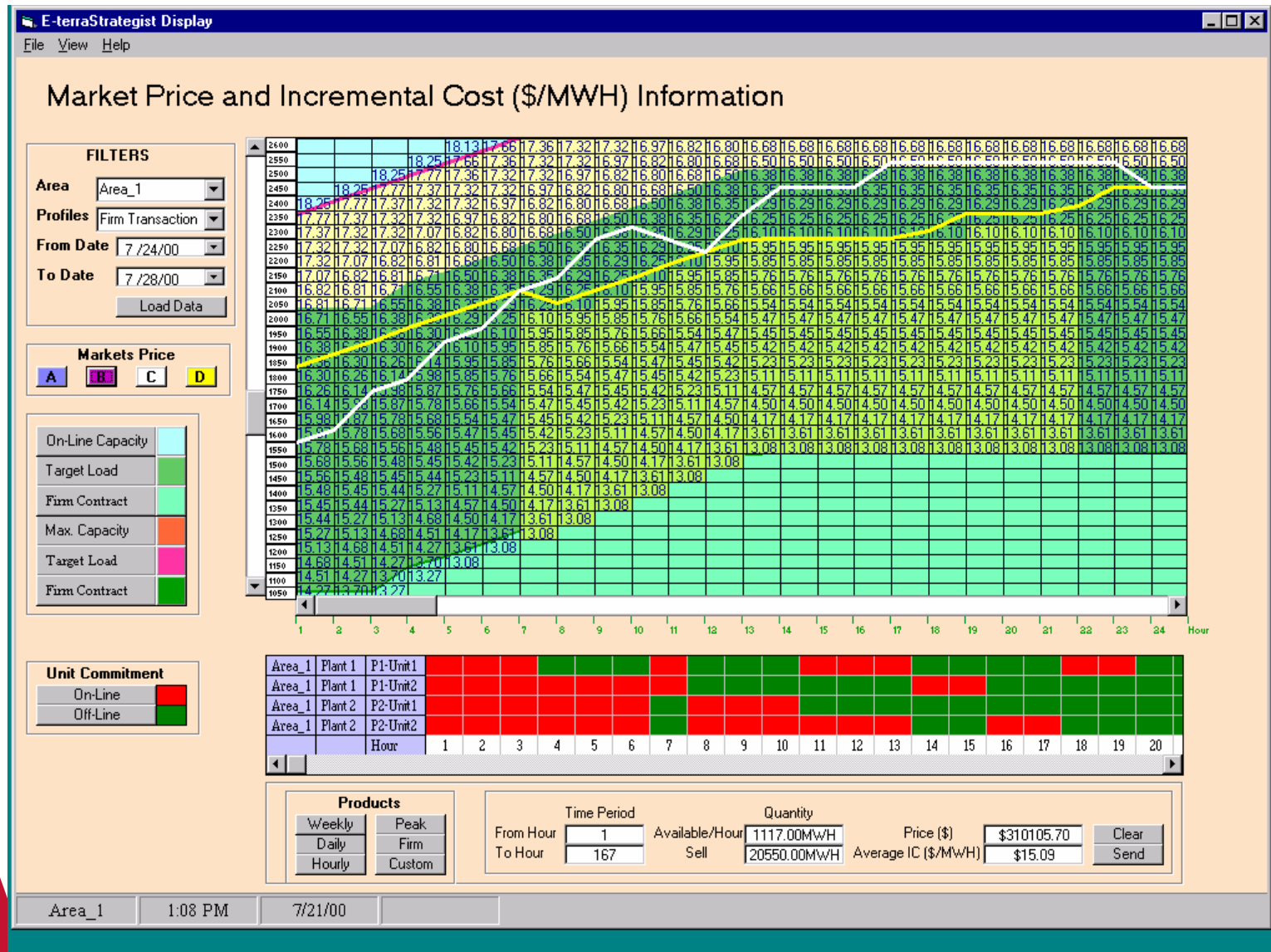
Real-Time Price

Day Ahead Price

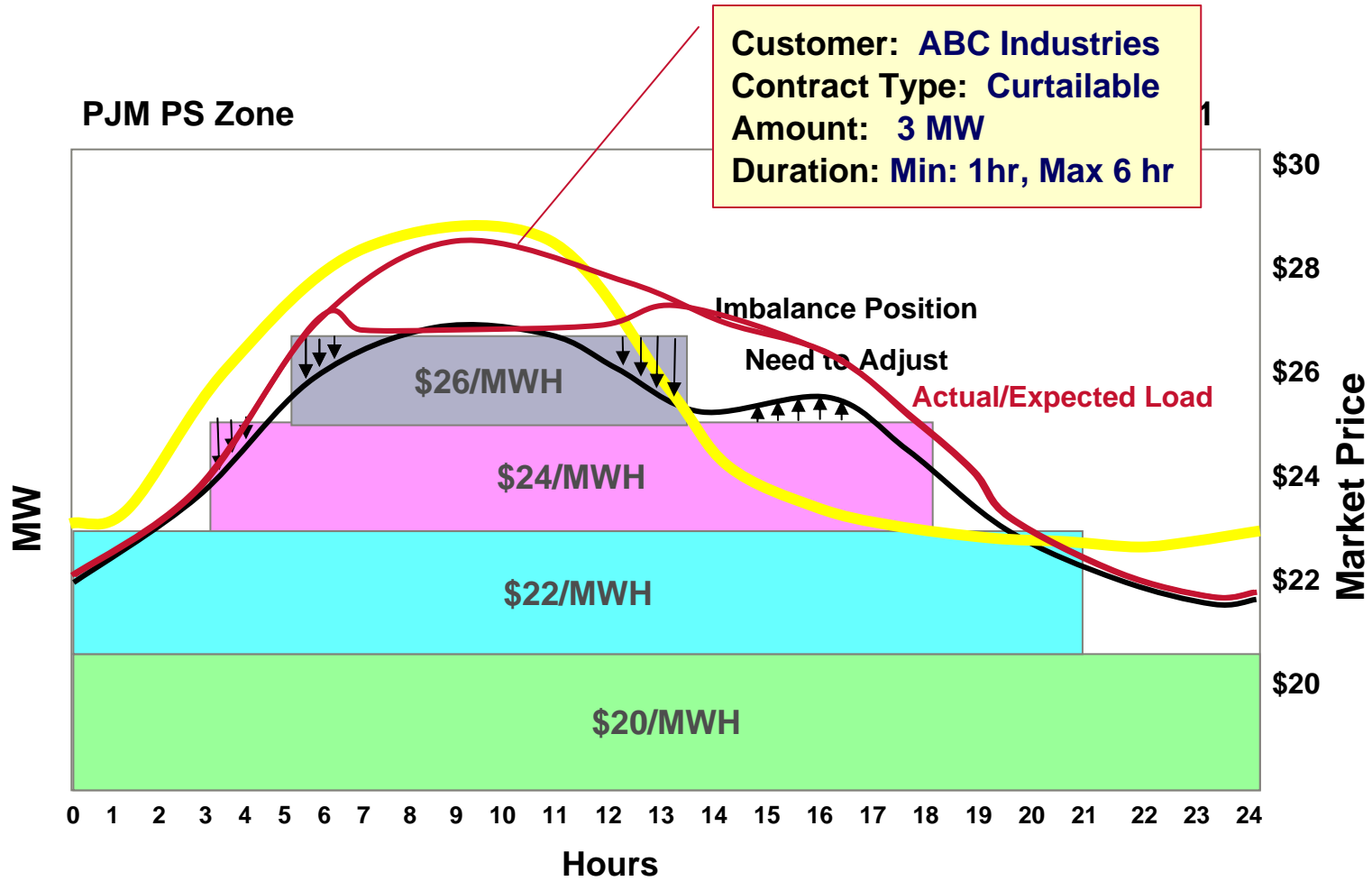
Market Drivers

- ▶ **Energy marketers are well positioned to maximize the value of DER assets and share it with their end users**
 - ◆ **Capture System Level Values**
 - ◆ **Manage supply and demand risks**
- ▶ **Higher Values can be gained through**
 - ◆ **Minimize Imbalance Energy**
 - ◆ **Supply Ancillary Services through Demand Side Management**
 - Spin and non-Spin Reserves
 - Frequency Regulation Support
 - ◆ **Hedge Against Congestion**
- ▶ **Energy Marketers Need Tools to**
 - ◆ **Monitor and Control Demand in Real-Time**
 - ◆ **Track and Respond to ISO/RTO Requirements & System Conditions**
 - ◆ **Manage Higher Levels of Risk**

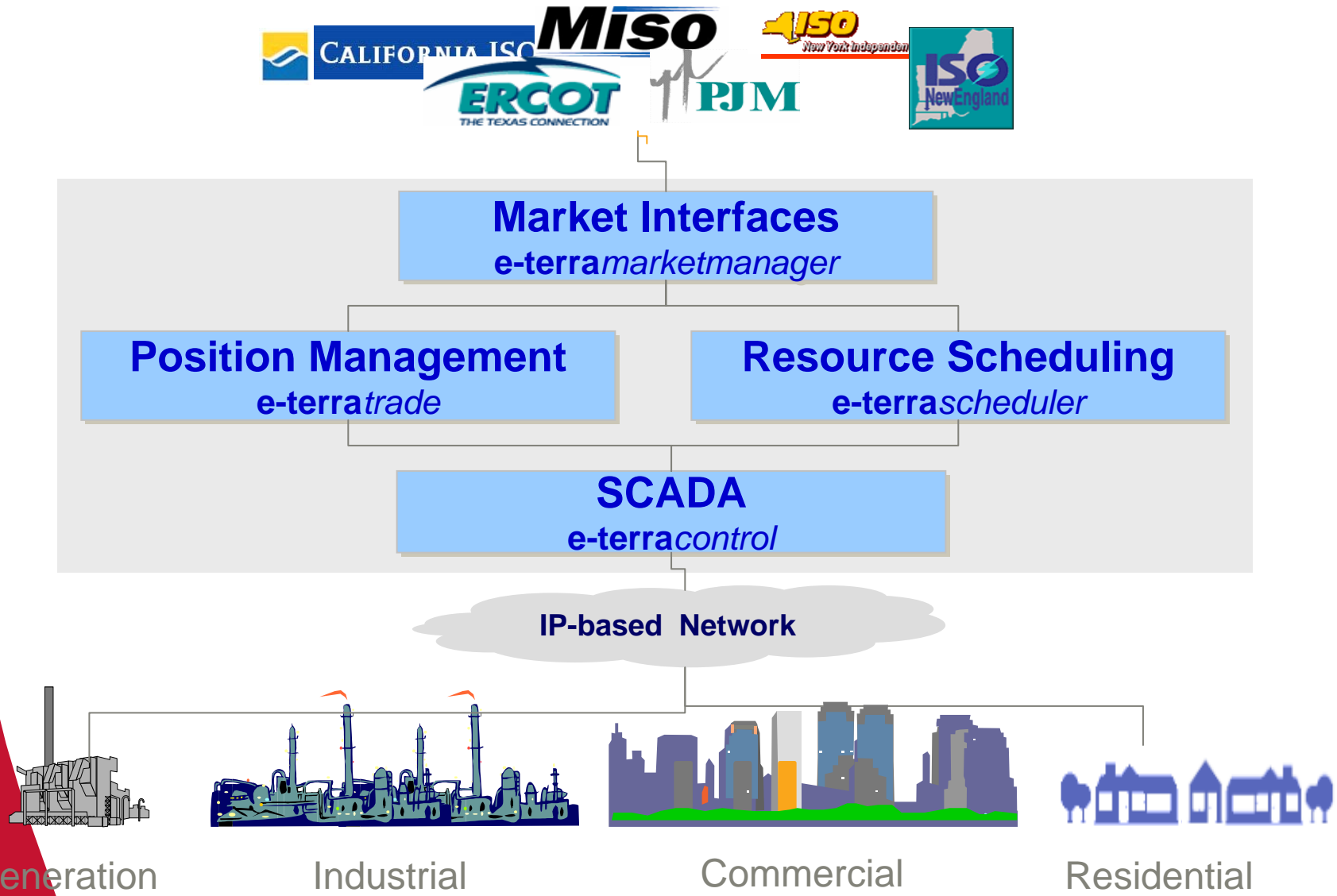
Generation Resource Management Screen



Position Management Tool



Demand Response and Resource Portfolio Optimization: Overall Solution



▶ California

- ◆ Utilities have been ordered to ramp up their demand response programs in anticipation of very tight and potentially inadequate generation in Summer 05
- ◆ California Automatic Demand Response Pilot – the customers who could “see” their high prices at peak periods reduced consumption by 52% compared to households on standard rates

▶ Italy

- ◆ Changing out 30 million meters, installing intervals
- ◆ 1750 MW of interruptible load in 2004
- ◆ Very tight reserve margins – 5-6%

▶ Netherlands

- ◆ Using DR to build a “virtual” plant to compensate for intermittency of wind power

▶ Australia

- ◆ New South Wales experiencing 14% peak load growth – strong interest in DER

Accelerating Demand Response

▶ **What can regulators do?**

- ◆ **Allow utilities to invest in AMI – provide the information infrastructure, give consumers choices**
- ◆ **Should be available to all classes**
- ◆ **Costs are minimal -- \$0.20/month – especially compared to cost of outages**
- ◆ **Put appropriate TOU tariffs in place to motivate consumers to respond**
- ◆ **Establish uniform protocols/time expectations for interconnection of customers switching from utility to competitive service providers**
- ◆ **Empower and educate your ratepayers – wake up the “brain dead” consumer!**



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