

FCC Field Hearing on Energy and the Environment

Monday November 30, 2009

MIT Stratton Student Center, Twenty Chimneys

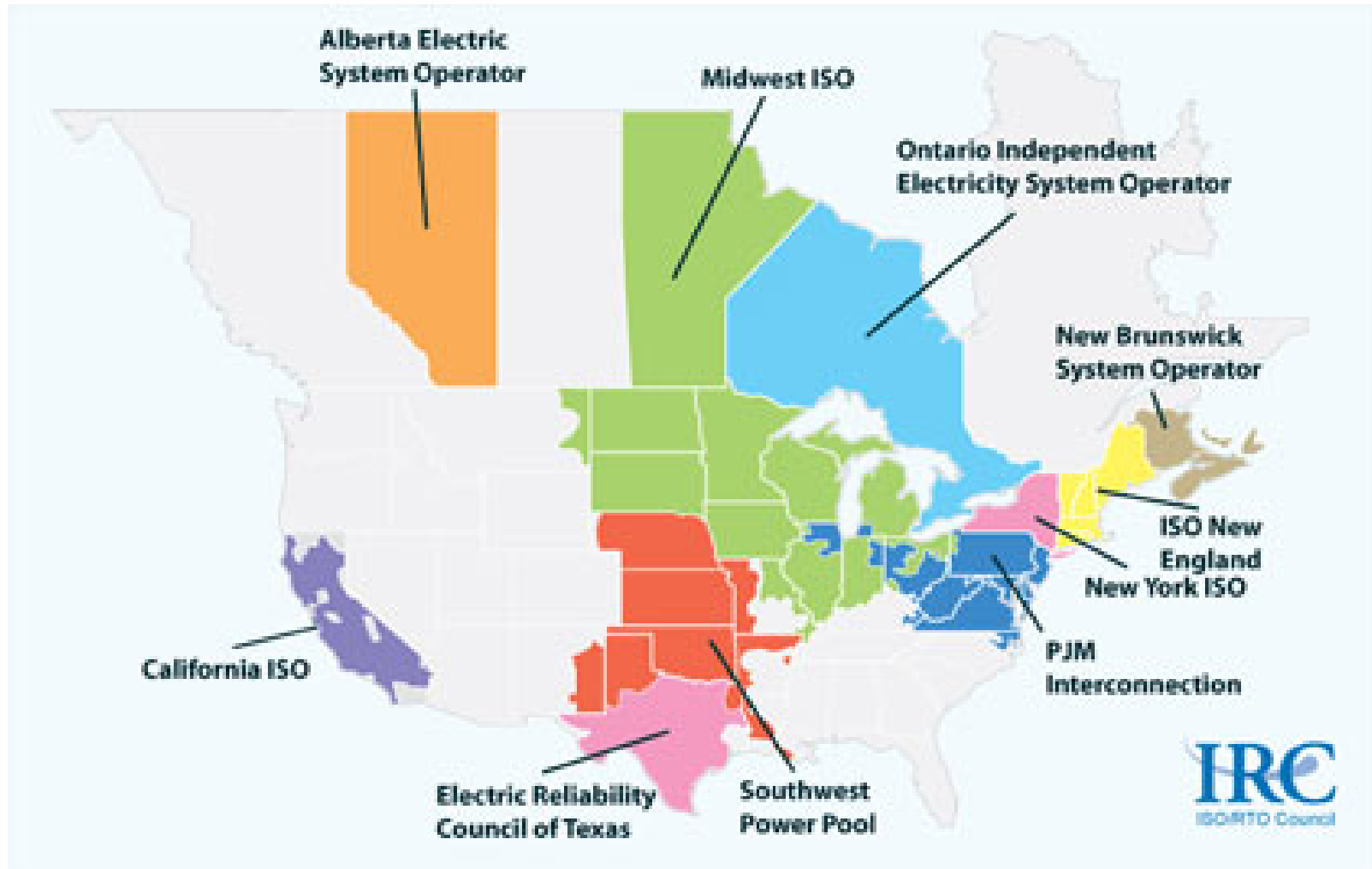
Peter Brandien, Vice President System Operations

Introduction – ISO New England Inc.

- Regional Transmission Organization
 - Independent of companies doing business in the market
- Responsible for:
 - Real-time bulk power system reliability
 - Administration and oversight of wholesale electricity markets
 - Regional system planning
- Not-for-profit corporation
 - Regulated by Federal Energy Regulatory Commission (FERC)



ISO/RTOs



Smart Grid Defined

Smart Grid is the integration of different infrastructures:

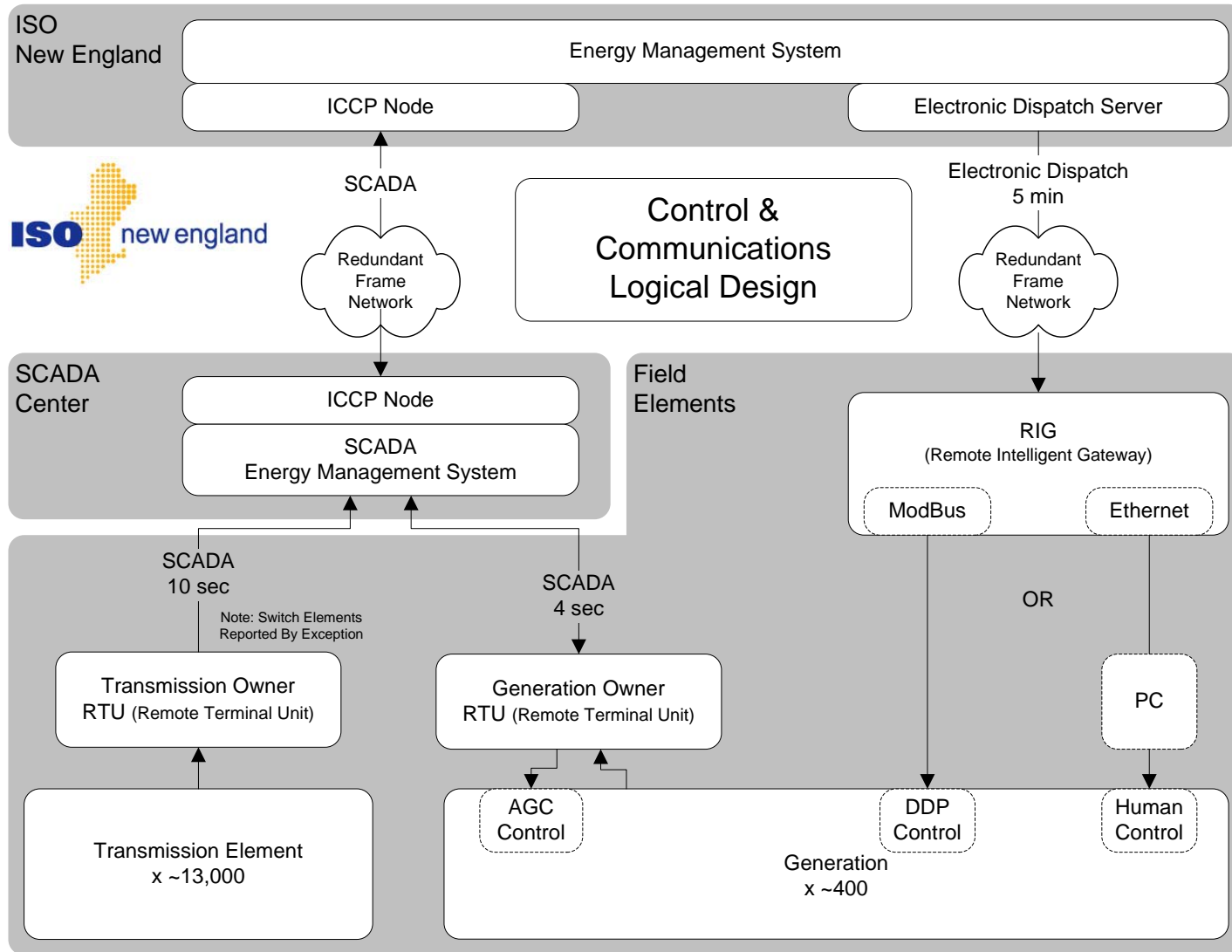
- Traditional Power System technologies*
- New Power System technologies*
- Communications*
- Information Technology*

All together implementing a new paradigm of power system design and control

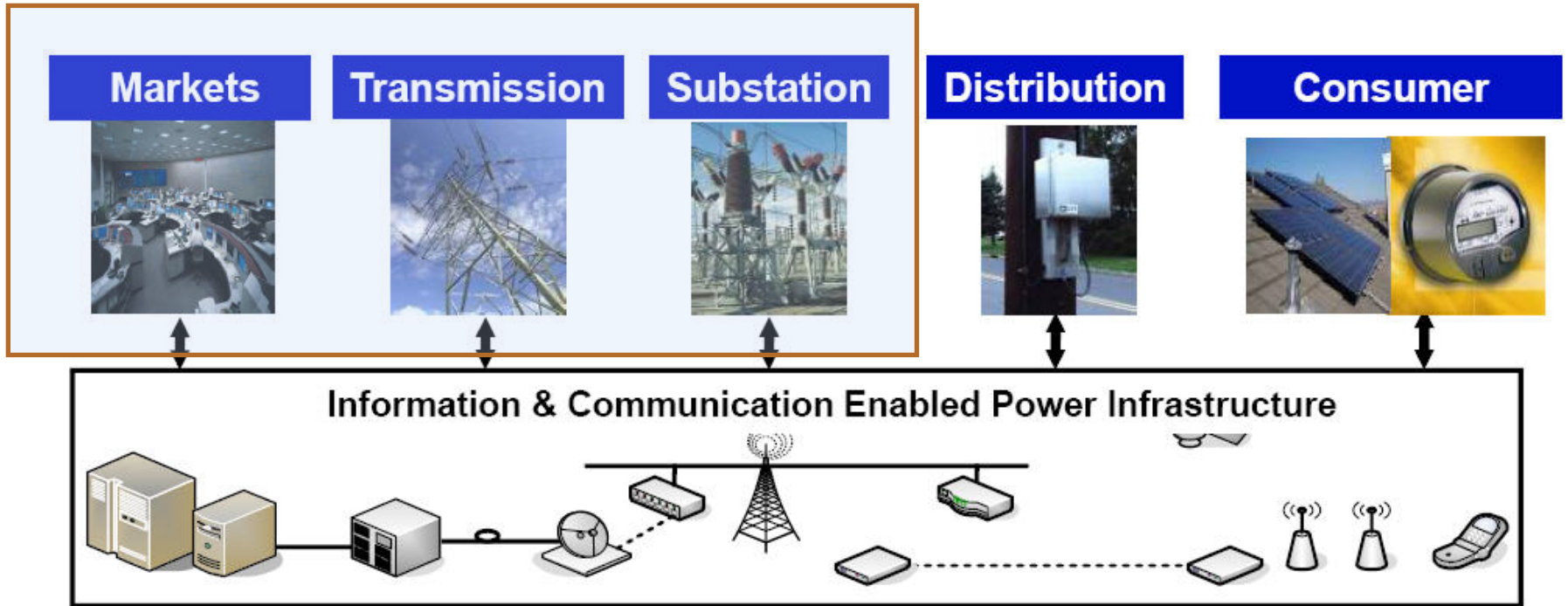
Smart Grid Objectives

- For Reliability
 - More capacity from transmission and distribution resources
 - Intelligent devices that automate monitoring and respond to emergency situations
 - Efficient production, movement and consumption of electricity
 - Tools and training to support control room
- For the Environment
 - Reduction in Greenhouse Gases
 - Greater penetration of renewables, energy storage and demand resources
- For Consumer Control
 - Transparency into electricity usage and prices
 - Opportunities for consumers to supply energy, capacity and ancillary services

DATA Communications – Overview



Integration with Other Infrastructures



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Communication Requirements

- Region wide Operations and Planning become more complicated under the Smart Grid
 - Requires frequent interaction among system control entities
 - More Choices and Uncertainty - Less time to react
 - **Reliability of Communication Paths**
- Standardization
 - **Need standardized control functions and communication protocols for use among power system control entities**
- Cyber Security
 - **Security (physical and cyber) is a key requirement and should be designed upfront as part of the Smart Grid**
 - NERC Critical Infrastructure Protection standards require compliance by all grid operators, transmission and generation owners