



Smart Grid Deployment: Why Is This So Difficult?

Phillip W. Powell

NCSL 2010 Legislative Summit

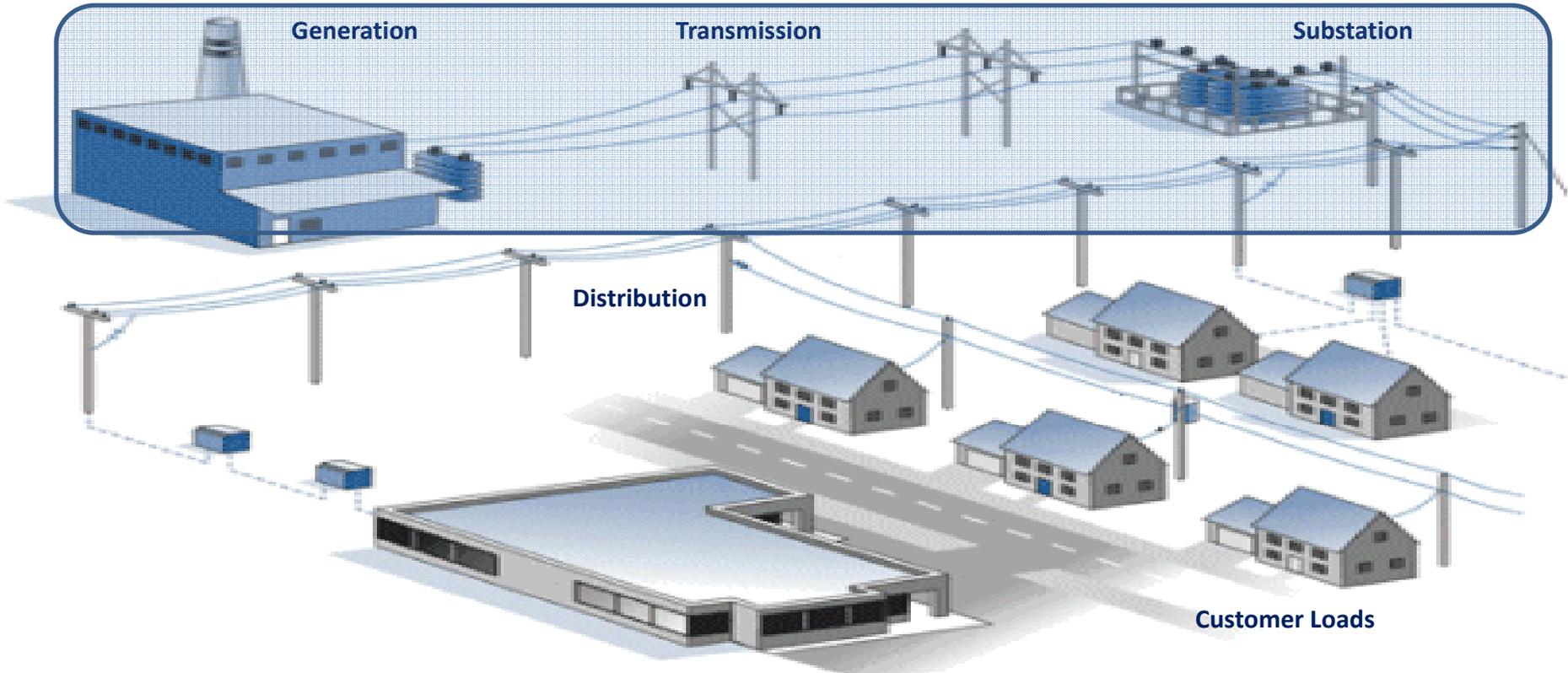
July 25, 2010

The Emergence of the Smart Grid Opportunity



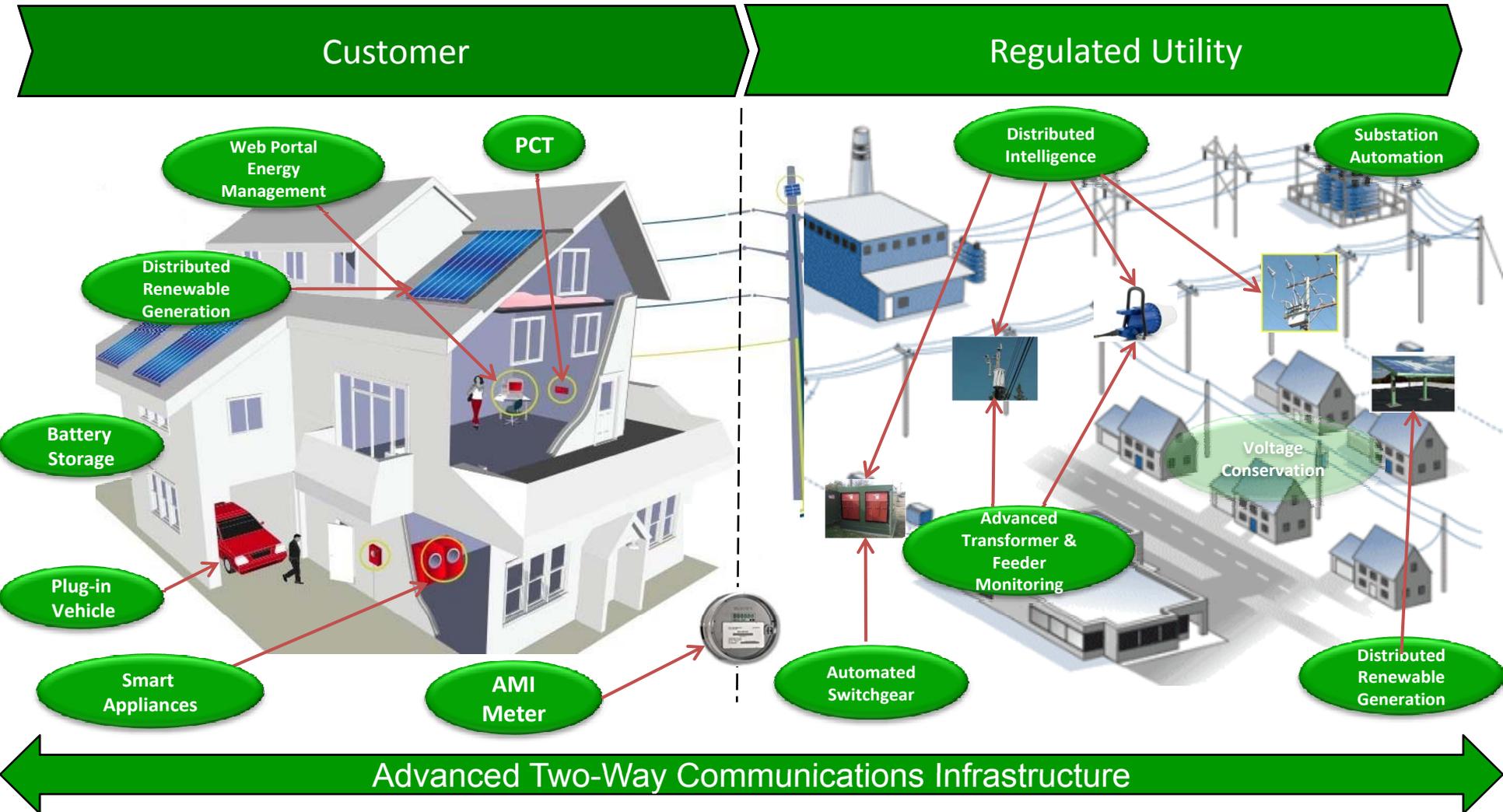
Today's Utility Grid

Regional Transmission Organization (RTO)

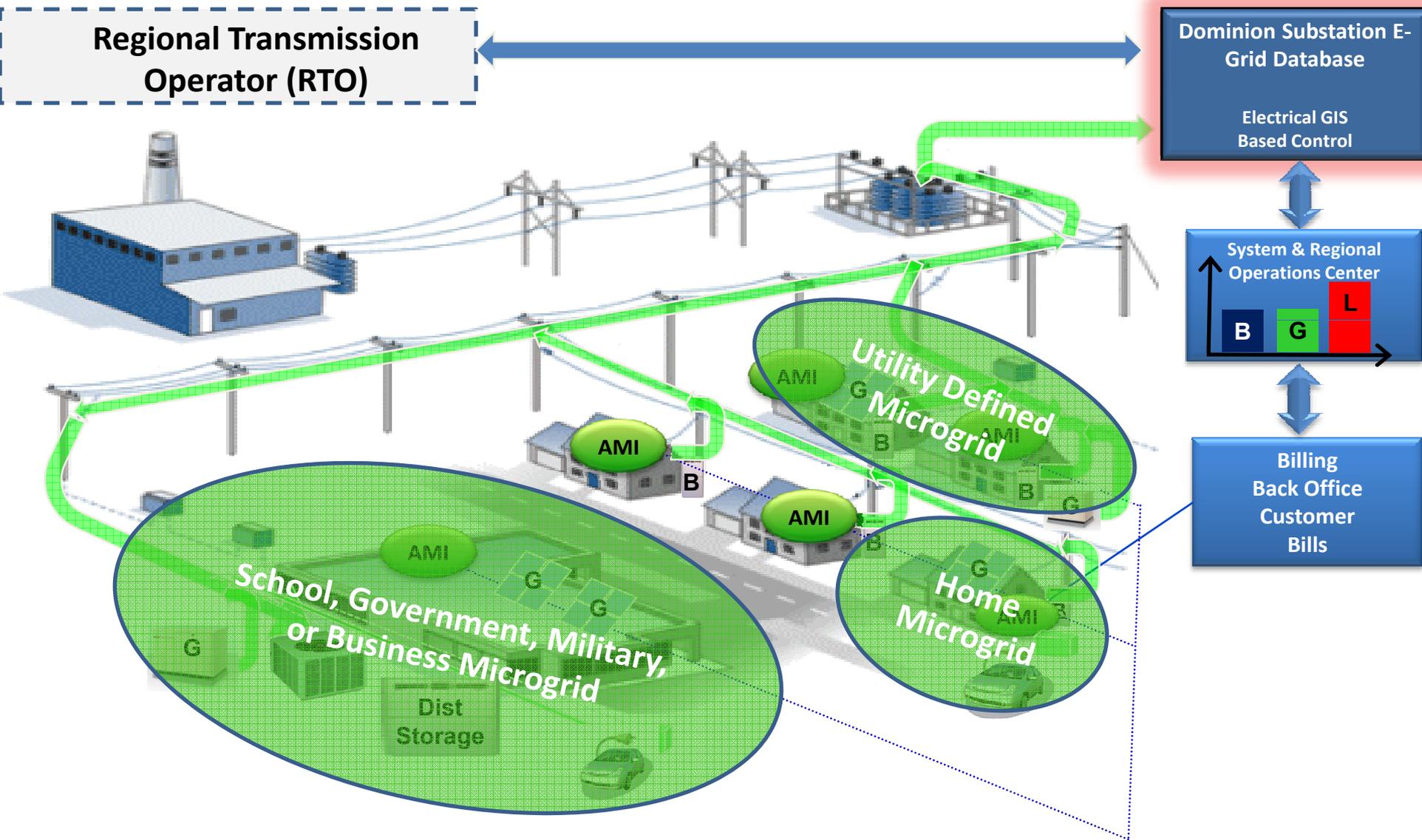


- Automated only from the central generation to the substation
- Distribution automation (automatic load restoration) and outage response system
- Limited data with one-way customer communication

Tomorrow's AMI-Enabled Home

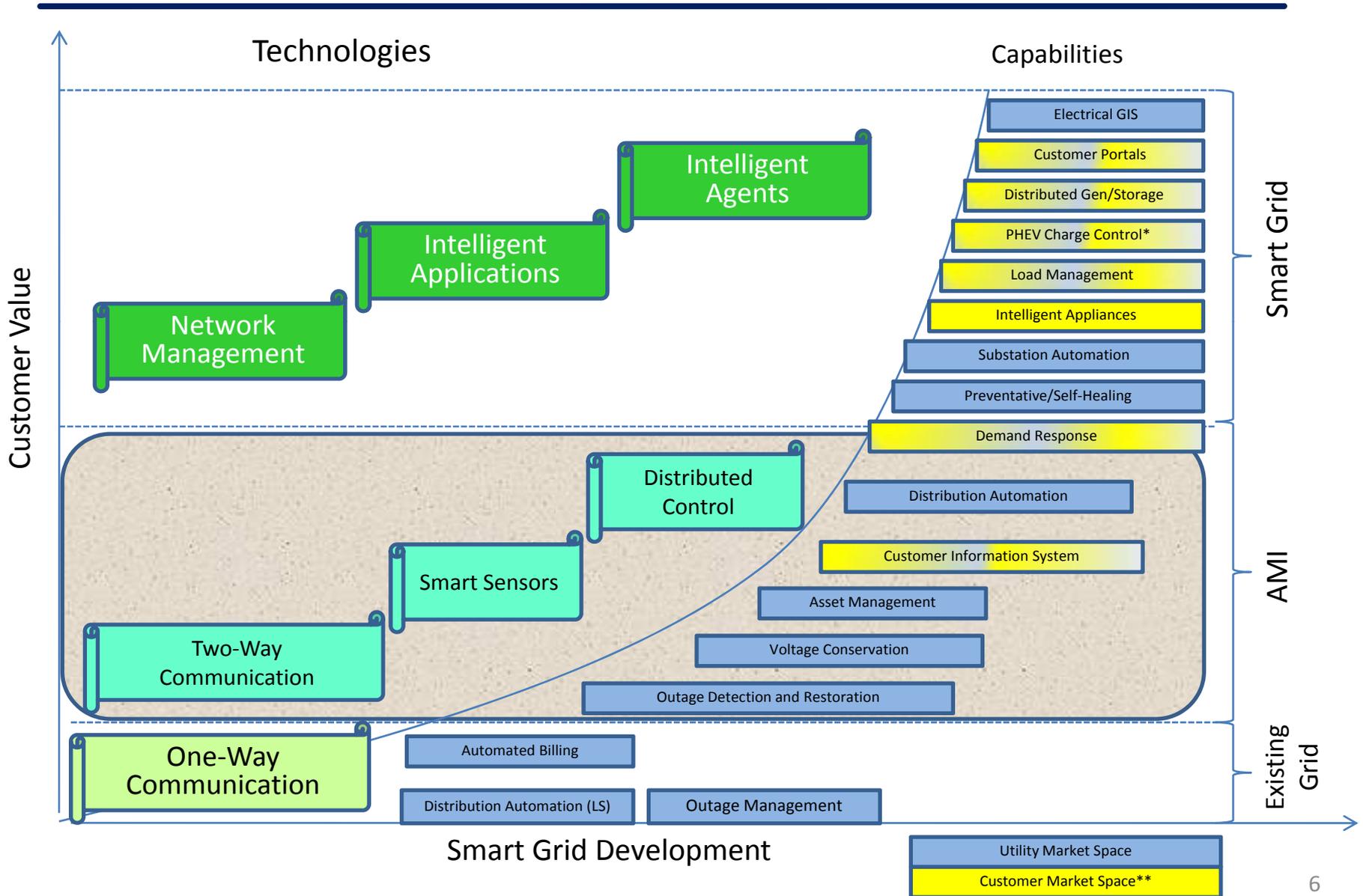


Tomorrow's Utility Integrated Smart Microgrid



Smart Grid Development Map

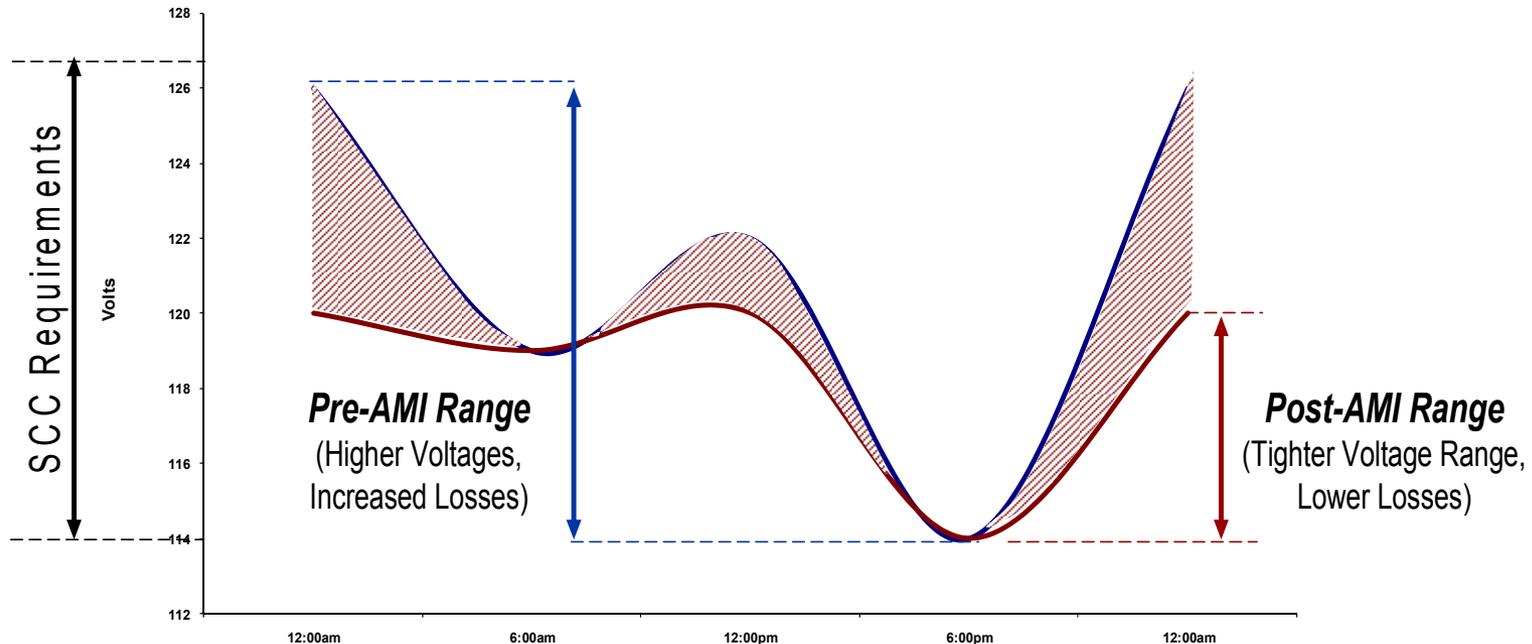
U.S. Smart Grid Build Out Opportunity - \$165B (EPRI Report June 2004)



Smart Grid Application: Voltage Conservation

Precision Voltage Control

- Application enabled by Smart Grid Technology
- Uses customer voltage feedback from smart meters (AMI)
- Controls voltage to a more precise level
- Results in 4% reduction in off-peak kWhs
- Improved Delivery of Electricity



Smart Grids and Microgrids – How will Technology Move?

Telecommunications

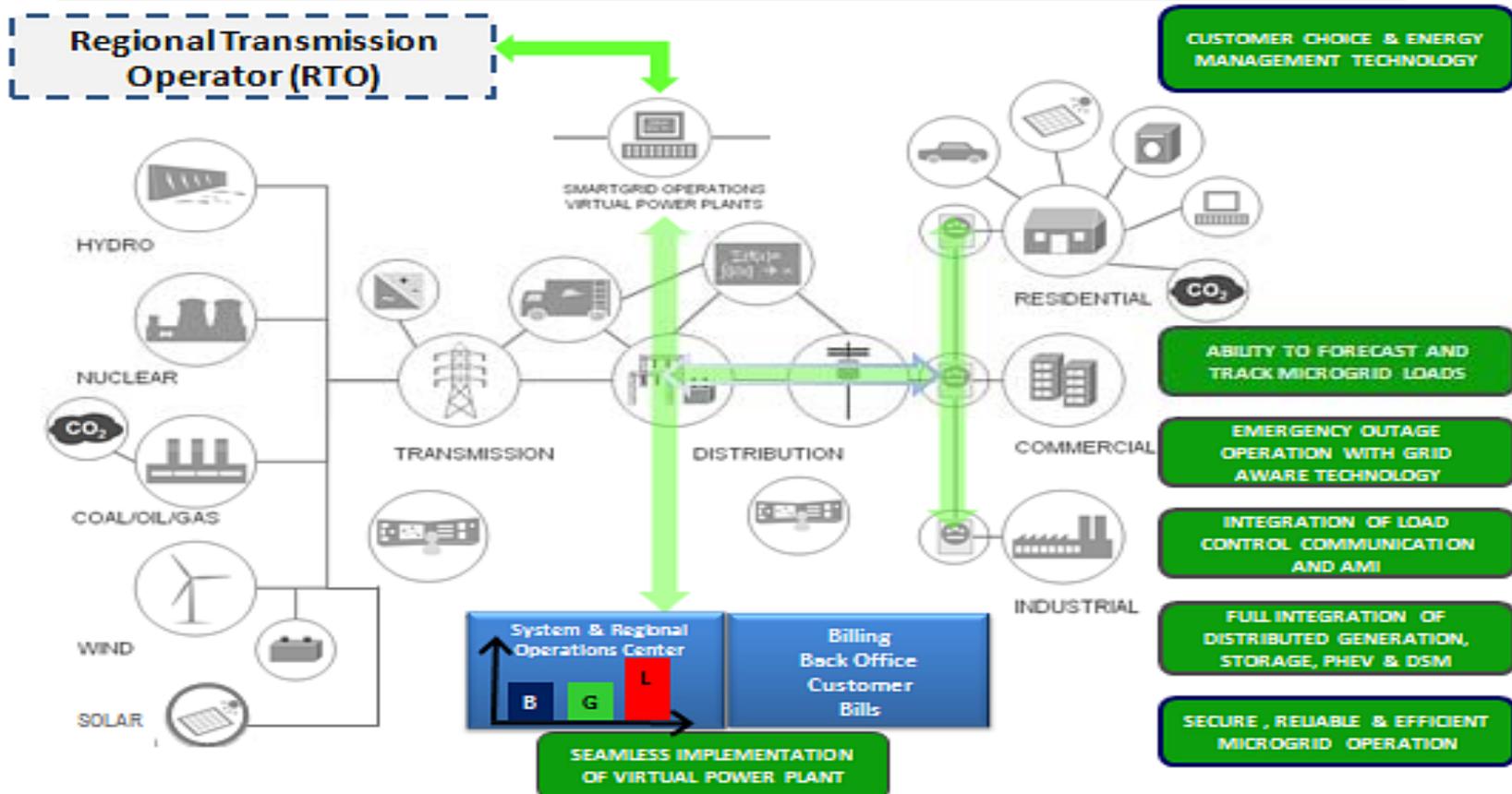
Satellite Phone → Cell Phone → Cell Phone with Texting → Cell Phone with Internet

Energy

AMI Meters Non - Realtime → In Home Energy Control with Real-Time Network → In Home Weather Monitor Energy Control & Security → Energy Network fully integrated with internet applications

Regulated Utility with Smart Grid

Develop Utility Integrated Smart Grid Vision



Conclusion

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