

Principal Characteristics of the Modern Grid

Presented by Joe Miller, Modern Grid Initiative Team
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What is a Modern Grid?

- **Key success factors are the goals**
- **Key technology areas enable it**
- **Metrics measure it**
- **The principal characteristics describe it**

It's "smart", "intelligent", "wise" but much more!



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Why do we need a clear vision?

- **Create understanding**
- **Enable alignment**
- **Motivate participants**
- **Get traction**
- **Make effective and efficient progress**
- **Stimulate investment**
- **Achieve momentum**

Success requires a clear vision!



Where do we start with defining the Vision?

The Modern Grid is:

- Reliable
- Secure
- Economic
- Efficient
- Environmentally friendly
- Safe

Key success factors are the goals!



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- **Self heals**
- **Motivates and includes the consumer**
- **Resists attack**
- **Provides power quality for 21st century needs**
- **Accommodates all generation and storage options**
- **Enables markets**
- **Optimizes assets and operates efficiently**

Principal Characteristics describe it!



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- **Detect, analyze, respond and restore**
- **Broader, deeper, faster**
- **Proactive vs. reactive**
- **Modern Grid's immune system**

Power outages cost US economy ~\$125B annually



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- **Gives consumers more choice and convenience**
- **Gives system operators more options**

Involving the consumer is win – win!



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- **Deter, detect, mitigate, respond, and restore**
- **Physical and cyber**
- **Foundational**

Energy Security has become National Security



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Provides Power Quality for 21st Century Needs

MODERN GRID
INITIATIVE

- **Delivered power quality meets load requirements**
- **Solutions at both system and consumer level**
- **Price vs. quality**

PQ issues cost US economy ~\$25B annually



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Accommodates All Generation and Storage Options

- **Easy, and low cost to interconnect**
- **Decentralized, aggregated, diverse portfolio**
- **Real time price signals**
- **Increased investment**

Enables self-healing and resists attack!



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- **Widespread, regulated and competitive wholesale markets**
- **Growth of selected, competitive retail markets**
- **Growth of “electricity related” markets**

Markets motivate behavior and get results



Optimizes Assets and Operates Efficiently

Improves:

- System planning processes
- Maintenance programs
- Efficiency in operations
- Performance of other enterprise-wide processes

Reduces O&M and capital expenses!



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