

The Smart Grid Advantage

Real. Smart. Solutions.

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imagination at work

Real. Energy. Challenges.

Geopolitical challenges:

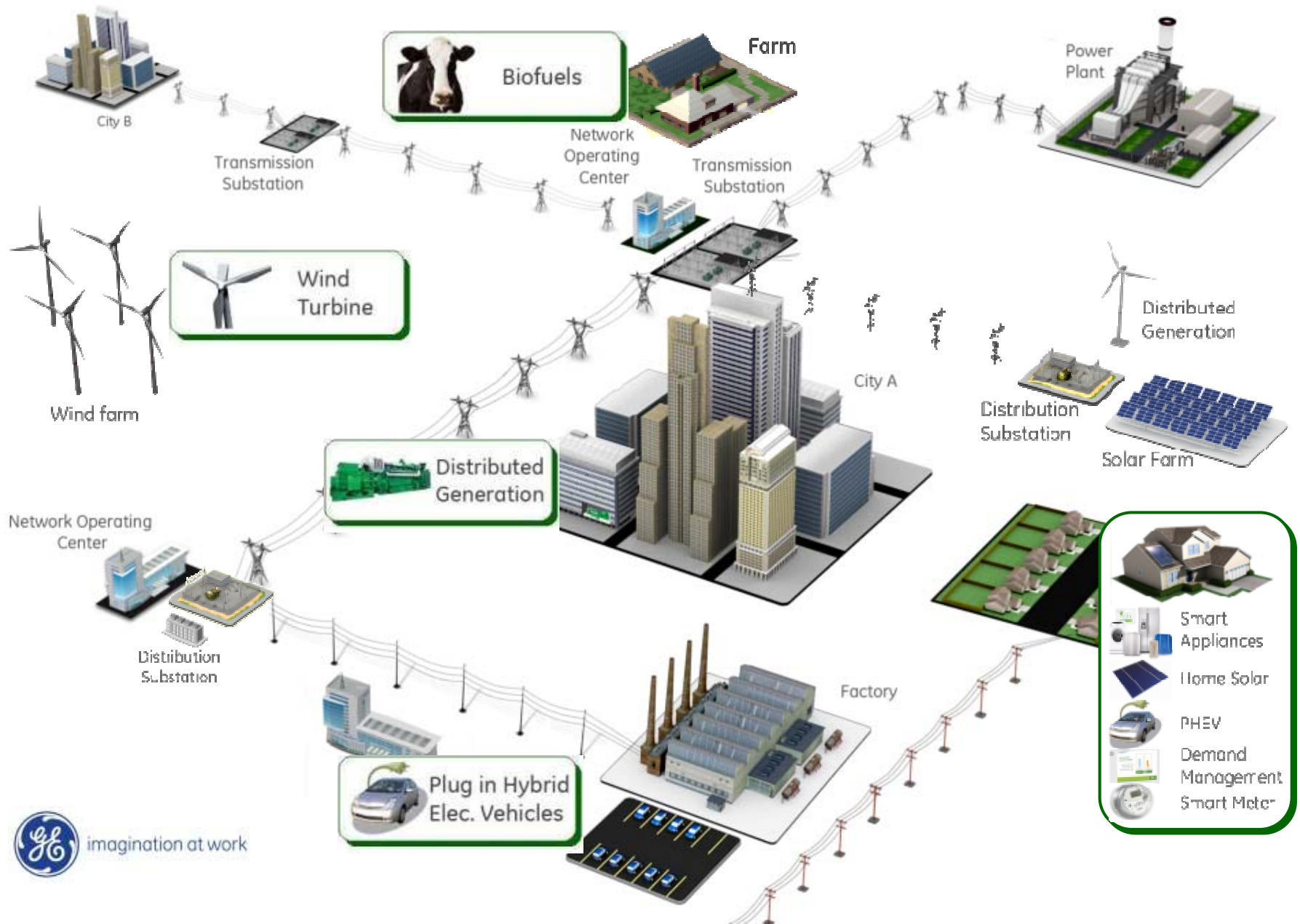
- 100% - Global energy demand growth by 2030
- 40% - Electricity's share of greenhouse gas emissions
- 42% - Average rate of U.S. retail electricity cost increases
- 4 'E's
 - Economic Competitiveness
 - Energy Security
 - Empowerment – Consumers
 - Environmental Sustainability

Industry challenges:

- Policy drives adoption of green energy and smart grid
- Long-term energy demand increasing
- Rising cost of energy
- Importance of reliability & quality
- Aging infrastructure and workforce



Answers create complexity



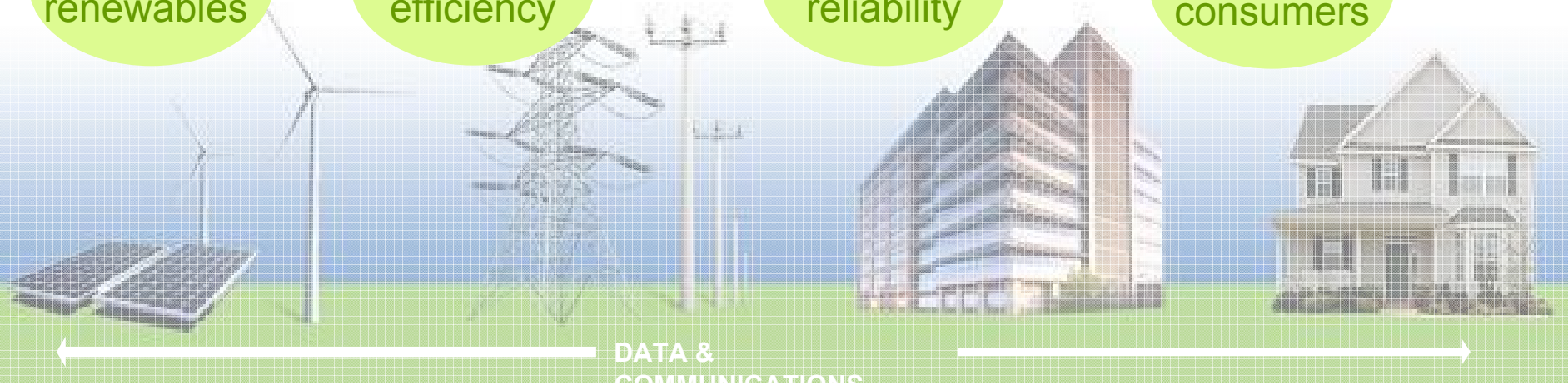
Real. Smart. Solutions.

Embracing
renewables

Increasing
efficiency

Increasing
reliability

Empowering
consumers



Power Generation

- Generation optimization
- Renewables
- Microgrids
- Protection & control

Transmission & Distribution

- ← Asset monitoring & diagnostics →
- Diagnostics & visualization
 - Substation digitization
 - Mobile applications
 - Reliability & demand forecasting

Industrial & Commercial

- ← Advanced metering infrastructure →
- ← Distributed generation infrastructure →
- Backup power mgmt & control
 - TOU reporting
 - Energy management

Residential & Community

- Smart appliances
- Home energy monitoring

GE Smart Grid at Work

Real. Clean. Solutions.

Technology:

Wind integration technologies,
Distribution Management System,
Demand Response, Volt/VAR
Control

Benefits:

- 40% of Hawaii's electricity to come from clean renewable energy sources by 2030
- Reducing peak load by 15%



GE Smart Grid at Work

Real. Productive. Solutions

Technology:

Field Force Automation

Benefits:

- Productivity improvements for:
 - Office workers
 - Field workers



GE Smart Grid at Work

Real. Efficient. Solutions.

Technology:

Volt-VAR Control

- Centralized
- Substation based

Benefits:

- Lowering voltage by as much as 3%; reducing consumer demand
- Power factor approaching .98



GE Smart Grid at Work

Real. Reliable. Solutions.

- Technology:
- Distribution Management System

- Benefits:
- 20% fewer customer interruptions
- 30% fewer customer minutes lost



GE Smart Grid at work

Collaborations & alliances are critical

- \$200M smart grid initiative
- ~800-1,000 “green collar” jobs
- Public/private alliance

GE City of Miami
FPL Cisco
Silver Spring Networks

- ~1MM customers involved

Smart meters Demand Management
Distribution automation Substation intelligence
Distributed generation Enterprise systems

“It’s time for action. With projects like Energy Smart Miami, we can stimulate the economy today and build a brighter, cleaner tomorrow. It’s truly a win-win.”

Carol

Browner



Assistant to the President for Energy and Climate Change

imagination at work

GE Proprietary &
Confidential



Educate, engage and excite consumers



ENERGY ISSUES

SMART GRID SOLUTIONS

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TAKE ACTION

RESOURCES

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SO WHAT IS THE SMART GRID ANYWAY AND WHY SHOULD I CARE?

- MANAGE RISING COSTS
- ENERGY INDEPENDENCE
- GREEN JOBS
- ENVIRONMENTAL IMPACT
- POWER RELIABILITY
- MODERN INFRASTRUCTURE

WHAT IS THE SMART GRID?



The smart grid is, in essence, an “energy internet” in that it delivers real-time energy information and knowledge directly to you

[> FIND OUT MORE](#)



[plugintothsmartgrid](#)
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[Plug-in Hybrid Vehicles](#)
Watch Video | Share



[An Energy Internet](#)
Watch Video | Share

A day in the life in 2013 ...

- Home energy management systems
- Distributed power generation, including roof top solar
- Plug-in hybrid electric vehicles
- Power when and where you need it
- Improved reliability and customer service



Backup Slides

The Smart Grid

Smart grid marries automation and information technologies with current electrical infrastructure to support our 21st Century society energy needs.

Acting as an “energy internet,” the smart grid delivers real-time energy information and knowledge, empowering smarter energy choices.

A smarter grid:

- enables **integration of more clean, domestic energy sources** (such as wind, solar, biogas) and plug-in electric vehicles
- **increases energy and operational efficiencies and reliability** to deliver greater productivity
- **empowers consumers with information** to manage their energy usage and save money without compromising their lifestyle

End-to-End GE Holistic Smart Grid Solutions

Smart Applications



Demand Response



Remote Monitoring & Diagnostics



DMS/OMS & Workforce Management



Smart Enterprise Intelligent Dashboard

End-to-End GE Infrastructures

Smart Home



Smart Crew



Smart Asset

