

What's happening now...

“Real. Smart. Solutions.”

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imagination at work



Tough Challenges Ahead

Targets



80% reduction in carbon emissions by 2050



20% renewable energy by 2020



80% smart meter coverage by 2020

Landscape



UK population set to rise to 65M by 2020



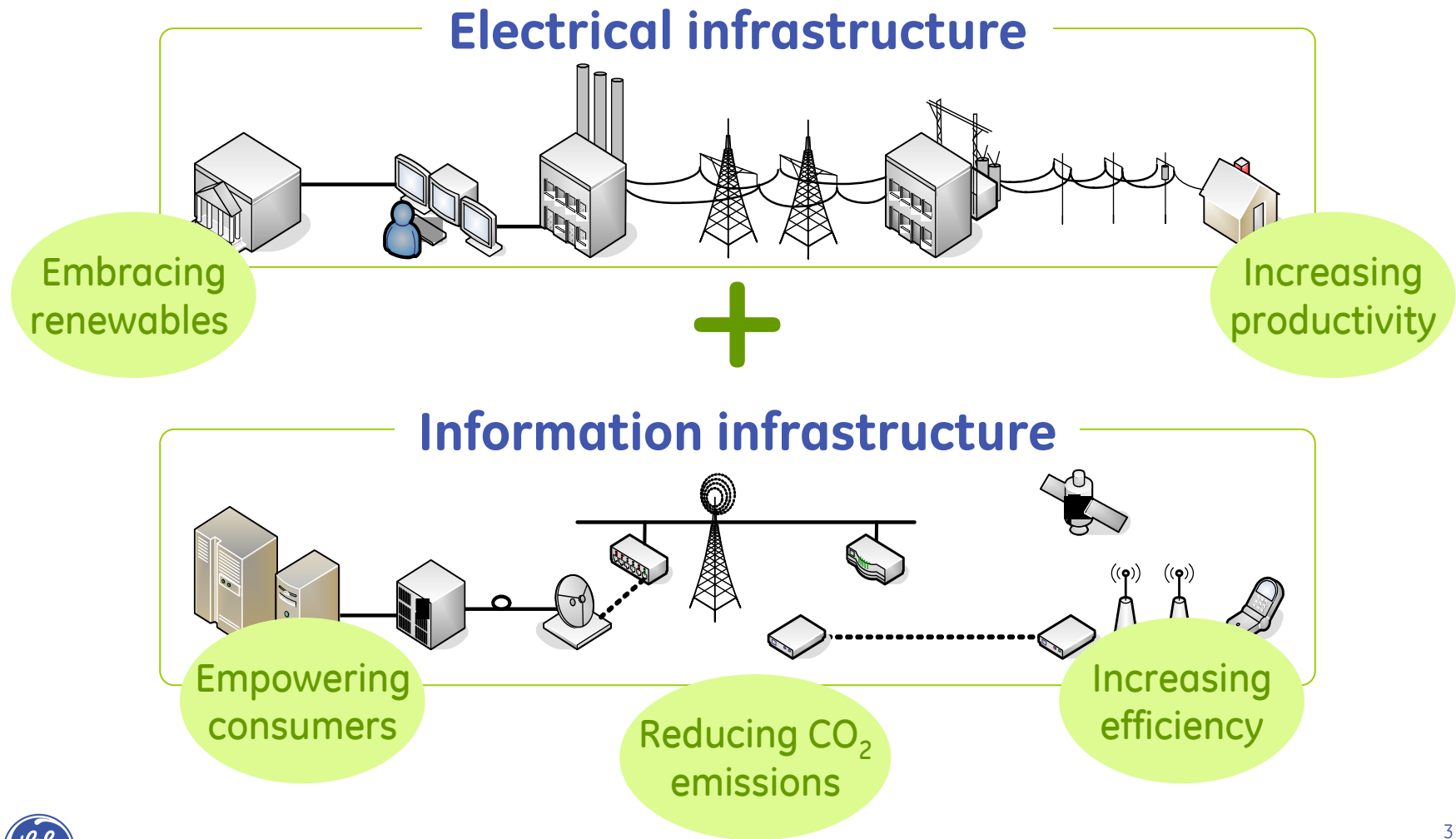
50% increase in UK energy costs 2007-09



Aging infrastructure – 20% of grid assets over 50 years old

Driving the need for a smarter grid

The integration of two infrastructures ... securely ...



imagination at work

Sources: (1) UtilityPoint, by Ethan Cohen 7/18/0 (2) EPRI® Intelligrid

What can SG solutions address

Infrastructure Improvements

- System planning/design
- Power delivery equipment & systems
- Smart Metering

Connectivity

- Visualization of assets
- Power system reconfiguration
- Communications enabling AMI

Reliability & Optimization

- Self healing power systems
- Network/asset planning & mgmt systems
- Substation & feeder automation
- Equipment monitoring & diagnostics

Safety & Security

- Personnel & public safety
- Availability of electrical assets
- Cyber security & private networks

Workforce Automation

- Outage managements systems
- Mobile workforce solutions
- Remote monitoring & diagnostics



A smarter grid ... enables new energy era solutions



Smart Grid at work around the world...



GE Smart Grid at Work

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Technology:

Distribution Management System

Benefits:

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



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Technology:

Volt-Var Control

- > Centralized
- > Substation based

Benefits:

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



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Technology:

Wind integration technologies,
DMS, Demand Response, IVVC

Benefits:

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



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Technology:

Smart Meters & Smart Appliances

Benefits:

- Lowering peak demand
- Meter directs high-energy-consumption activities to off-peak times
- Consumers are saving up to 20% on their electric bill with time-of-use pricing



GE Smart Grid at work

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- \$200M collaborative smart grid initiative
- ~800 jobs
- Public/private alliance
 - ✓ GE
 - ✓ City of Miami
 - ✓ Florida Power & Light
 - ✓ Cisco
 - ✓ Silver Spring Networks
- ~1MM customers involved
 - ✓ Smart Meters
 - ✓ Demand Management
 - ✓ Distribution Automation
 - ✓ Substation Intelligence
 - ✓ Distributed Generation
 - ✓ Smart Design/Smart Crew



GE Smart Grid at Work

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Technology:

- GE Smallworld's Workforce Engineering & Design Solutions

Benefits:

- Productivity improvements for:
 - > Office/Field workers
 - > Smart Grid design
 - > Comprehensive visualization & network optimization



Proving the concept

Real. Smart. Solutions

Technology:

Holistic smart grid demo center

Benefits:

- Showcasing generation to consumption
- City-wide deployment in 2012

Additional benefits:

- 40-45% CO2 reduction by 2020
- Modernizing infrastructure



Consumer education is critical

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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

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An Energy Internet
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