

# The smart grid at work



## Presented by: Luke Clemente, GM Smart Grid, GE Energy, T&D

**Results are preliminary and unaudited.** This document contains "forward-looking statements"- that is, statements related to future, not past, events. In this context, forward-looking statements often address our expected future business and financial performance and financial condition, and often contain words such as "expect," "anticipate," "intend," "plan," "believe," "seek," "see," or "will." Forward-looking statements by their nature address matters that are, to different degrees, uncertain. For us, particular uncertainties that could cause our actual results to be materially different than those expressed in our forward-looking statements include: the severity and duration of current economic and financial conditions, including volatility in interest and exchange rates, commodity and equity prices and the value of financial assets; the impact of U.S. and foreign government programs to restore liquidity and stimulate national and global economies; the impact of conditions in the financial and credit markets on the availability and cost of GE Capital's funding and on our ability to reduce GE Capital's asset levels as planned; the impact of conditions in the housing market and unemployment rates on the level of commercial and consumer credit defaults; our ability to maintain our current credit rating and the impact on our funding costs and competitive position if we do not do so; the soundness of other financial institutions with which GE Capital does business; the adequacy of our cash flow and earnings and other conditions which may affect our ability to maintain our quarterly dividend at the current level; the level of demand and financial performance of the major industries we serve, including, without limitation, air and rail transportation, energy generation, network television, real estate and healthcare; the impact of regulation and regulatory, investigative and legal proceedings and legal compliance risks, including the impact of proposed financial services regulation; strategic actions, including acquisitions and dispositions and our success in integrating acquired businesses; and numerous other matters of national, regional and global scale, including those of a political, economic, business and competitive nature. These uncertainties may cause our actual future results to be materially different than those expressed in our forward-looking statements. We do not undertake to update our forward-looking statements."

"This document may also contain non-GAAP financial information. Management uses this information in its internal analysis of results and believes that this information may be informative to investors in gauging the quality of our financial performance, identifying trends in our results and providing meaningful period-to-period comparisons. For a reconciliation of non-GAAP measures presented in this document, see the accompanying supplemental information posted to the investor relations section of our website at [www.ge.com](http://www.ge.com)."

"In this document, "GE" refers to the Industrial businesses of the Company including GECS on an equity basis. "GE (ex. GECS)" and/or "Industrial" refer to GE excluding Financial Services."

## GE Energy

Employees: 65,000 • '08 revenue: \$38.6B • Operating in 140 countries

### Power & Water



- Power generation
- Renewables
- Gas Engines
- Nuclear
- Gasification
- Water treatment
- Process chemicals

### Energy Services



- Contractual agreements
- Smart Grid
- Field services
- Parts and repairs
- Optimization technologies
- Plant management

### Oil & Gas



- Drilling/production for ... land, offshore, subsea
- LNG and pipelines
- Refining/petrochemical
- Industrial power gen
- Complete lifecycle services

# Energy Services ... where smart grid fits in

'08 revenue ... \$10.3 billion



## Outage Services

- Inspection & repair
- Uprates
- Life extension
- Multi-vendor services

## Contractual

- Turbines
- Power island
- Balance of plant
- Emissions testing
- O&M

## T&D

- Smart Grid
- Grid decongestion
- Metering solutions
- Automation systems
- T&D projects

## Environmental

- Emissions reduction & control (NO<sub>x</sub>, Hg, PM)
- Thermal performance services

## Optimization & Control

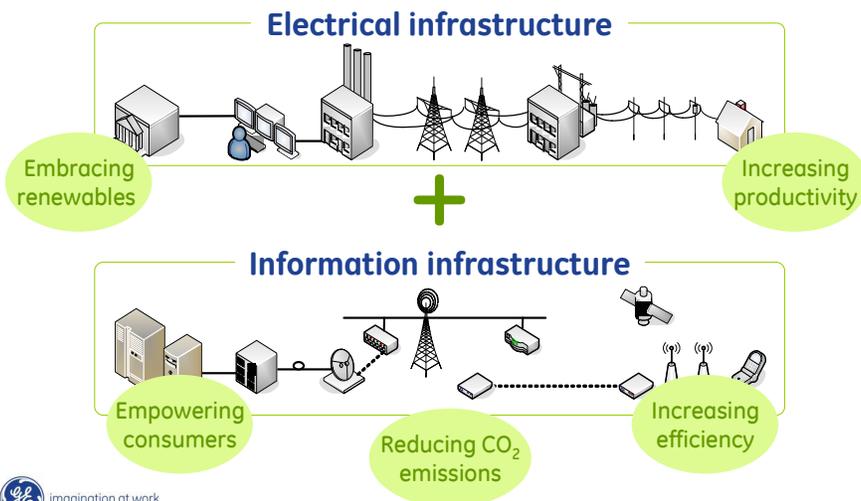
- Asset condition monitoring
- Control solutions
- Optimization & diagnostic software
- Comprehensive plant services



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# The smart grid is ... ... integration of two infrastructures ...



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Sources: (1) Utility General Electric Company 9/13/09 (2) EPRRI in Energy

## Geopolitical drivers ...



Source: Army Corp of Engineers



Source: U.S. Conference of Mayors resolution for Congress



Source: Energy Information Administration



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## Coupled with utility industry challenges

- Rapid increase in energy consumption and cost
- Aging infrastructure requires increased investment
- Heavy distribution losses
- Policy and regulation drive influx of "greener" energy resources



## The 4 "E" drivers

- Economic Competitiveness
- Energy Independence
- Empowerment of the Consumer
- Environmental Sustainability & Efficiency



## The smart grid market continues to grow ...

Estimated North American Smart Grid Market, 2009-2012 (\$Billions)



- Smart grid technologies account for 27% of total utility spend in 2009
- Smart meters account for single largest share of smart grid spend
  - > 2009 = 21%
  - > 2012 = 33%
- Integration & business services excluded from market analysis ~ tremendous market potential

### System Coordination

- 6% CAGR
- Protection & Control
- Wide area network communications
- Network management systems
- Dynamic line rating sensors & technology
- Phasor Measurement

### Delivery Infrastructure

- 22% CAGR
- Smart Meters - 31% CAGR
- AMI Communications
- Power Electronics
- Monitoring & Diagnostics
- Distribution Automation
- Substation Automation

### Demand Management

- 32% CAGR
- Load Management services
- In-Home displays and home management technologies
- Home area networks
- Distributed energy management systems

### Information Networks

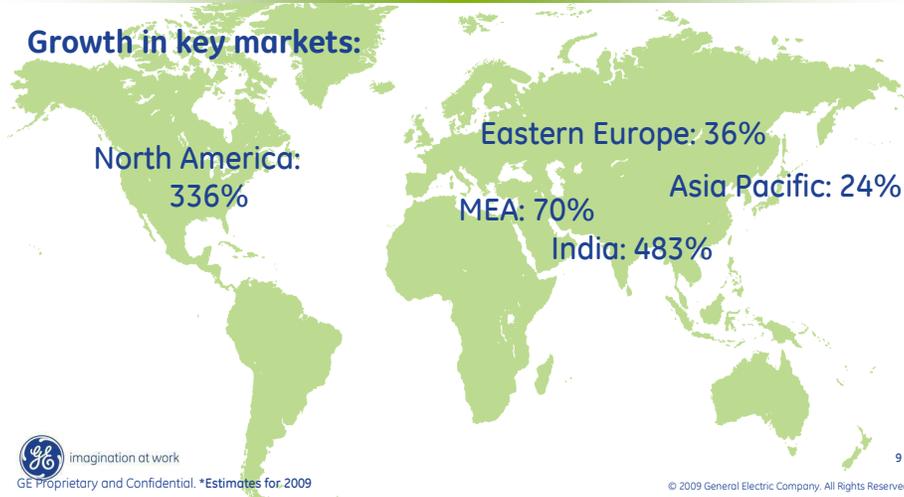
- 17% CAGR
- Data historians
- Cyber-security
- Network management system communications

## And it keeps getting better ...

Growth in GE smart grid orders, 2008 versus 2009\*

Globally ... 145%

### Growth in key markets:



## Global stimulus includes smart grid



- Expand power grid by 26,000 km, incl. new equipment by 2009 and 2010



- \$14.5 billion of guarantees for T&D and renewables
- \$4.5 billion for Smart Grid, including federal matching funds



- Additional funding for India's '07-'12 power development program in order to reduce T&D energy losses by 15%
- Part A-\$2B, SW/Auto
- Part B-\$8B, Hardware



- Support trans-European infrastructure
- Energy Package, 80% smart meter coverage by 2020
- EU 20/20/20



- Ofgem - £500MM, four (4) Smart Towns
- Olympic village
- Regulation to reward grid efficiency and reliability



- Govt \$100MM, two (2) Smart Cities
- Victoria required to achieve full smart meter coverage by 2013



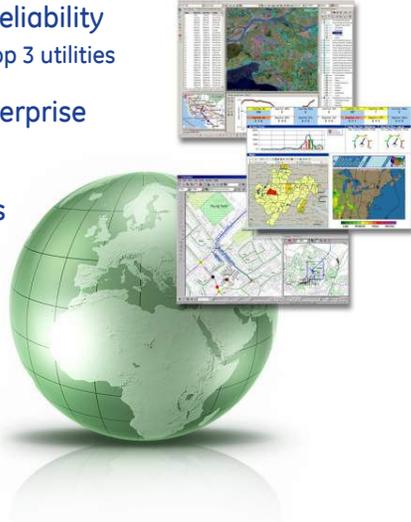
- Infrastructure: Smart Grids, Renewable integrations
- Demonstration programs, matching funds



- Jeju island test bed
- Development oppy's
- MKE directing Smart Meter roll-out

## We have a great head start

- DMS/OMS real-time data to improve reliability
  - 69 utilities in 16 countries, including global top 3 utilities
- Data management from device to enterprise
  - 300,000 Installations
- EMS managing transmission networks
  - Over 100 utilities, servicing 1.3B consumers
- GIS visualization for network design
  - More than 1,000 companies, in 40 countries



## Innovating advanced, holistic solutions ... for a smarter grid

Demand optimization

Distribution optimization

Transmission optimization

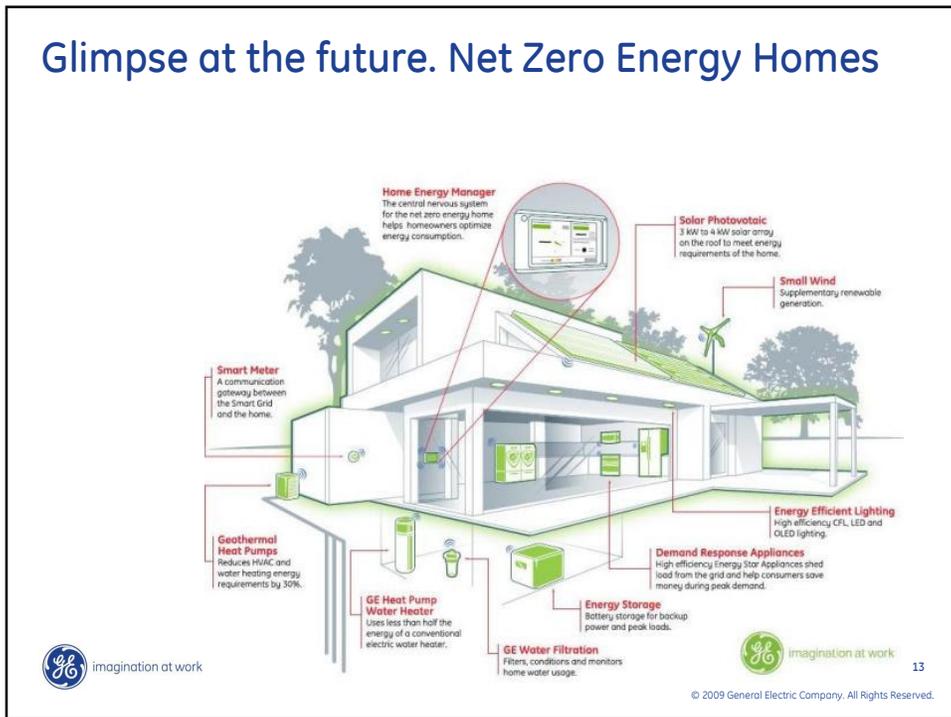
Asset optimization

Workforce & engineering optimization

Working together  
to provide  
customer solutions



## Glimpse at the future. Net Zero Energy Homes



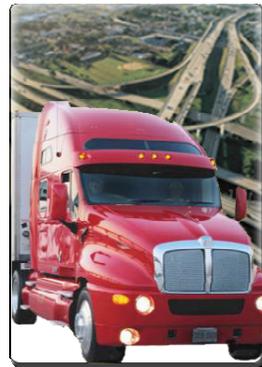
## We're data management experts



Private label credit cards

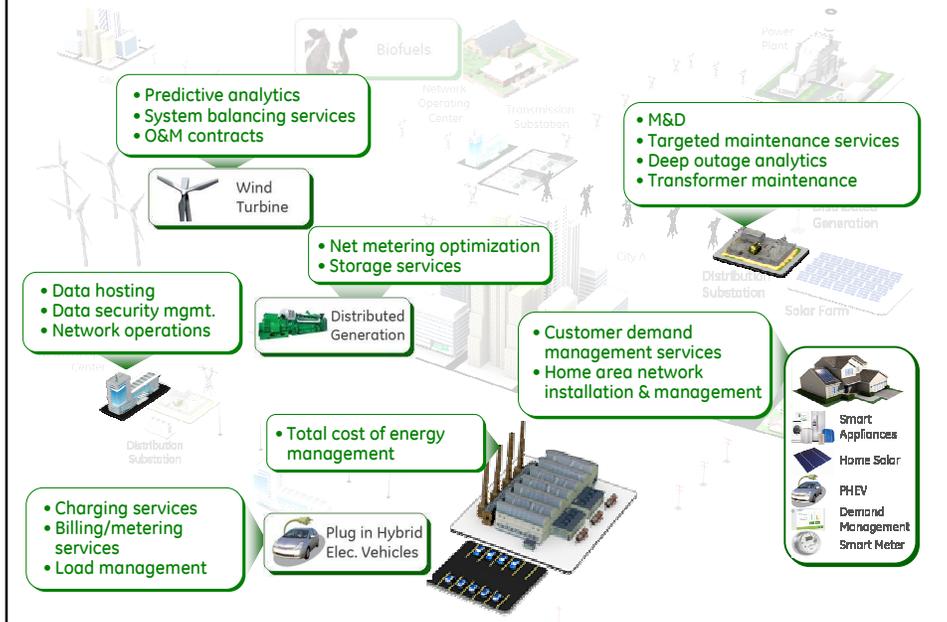


Patient records and care tracking



Mobile resource management

## New service opportunities



## Investing for growth

- 2X increase in new product spend
- 2X engineering resource expansion and ~35% increase in commercial resources globally



## The smart grid at work ... here ...

**Florida** to lead the nation in energy efficiency with **\$578 million** smart grid initiative



**Hawaii** bringing renewables on-line via GE smart grid technologies



**Ohio** leading holistic smart grid, from consumer empowerment to efficiency and security in **\$150 million** project



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## ... and globally ...



**UK:** Energy Minister Lord Hunt opens first Smart Grid Center in Europe, demonstrating generation to consumption, at GE Energy's Bracknell headquarters



**India:** NDPL enjoys benefits of GE's outage management systems and advanced geospatial information systems



**China:** Comprehensive and holistic smart grid demonstration in Yangzhou.



**Sweden:** Gothenburg Energy in Western Sweden to implement 90K GE smart meters



**Australia:** SP AusNet becomes first utility in the world to deploy WiMax smart grid solution



**New Zealand:** Utilities deploy distribution management systems to help improve reliability and integrate distributed renewable power



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## Positioned for success

- Strong geopolitical drivers and industry challenges create demand in market
- Stimulus dollars help drive global smart grid spending
- Industry growing at 20% per year
- GE well positioned to lead

