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Regional Workshop on Clean Energy Development strategies in East Africa



July 16-18, 2012
Arusha, Tanzania

Fouad Dagher
National Grid

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National Grid: who we are

An international electricity and gas company

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- … based in the UK and northeastern US
  - We play a vital role in delivering gas and electricity to millions of people safely, reliably and efficiently
- One of the world's largest investor-owned utilities
- Approximately 19 million industrial, commercial and domestic customers
- Almost 28,000 employees
  - 63% work in the US; 37% work in the UK
  - 77% males; 23% females; 13.5% ethnic minorities

Our Electricity Distribution & Generation business - US

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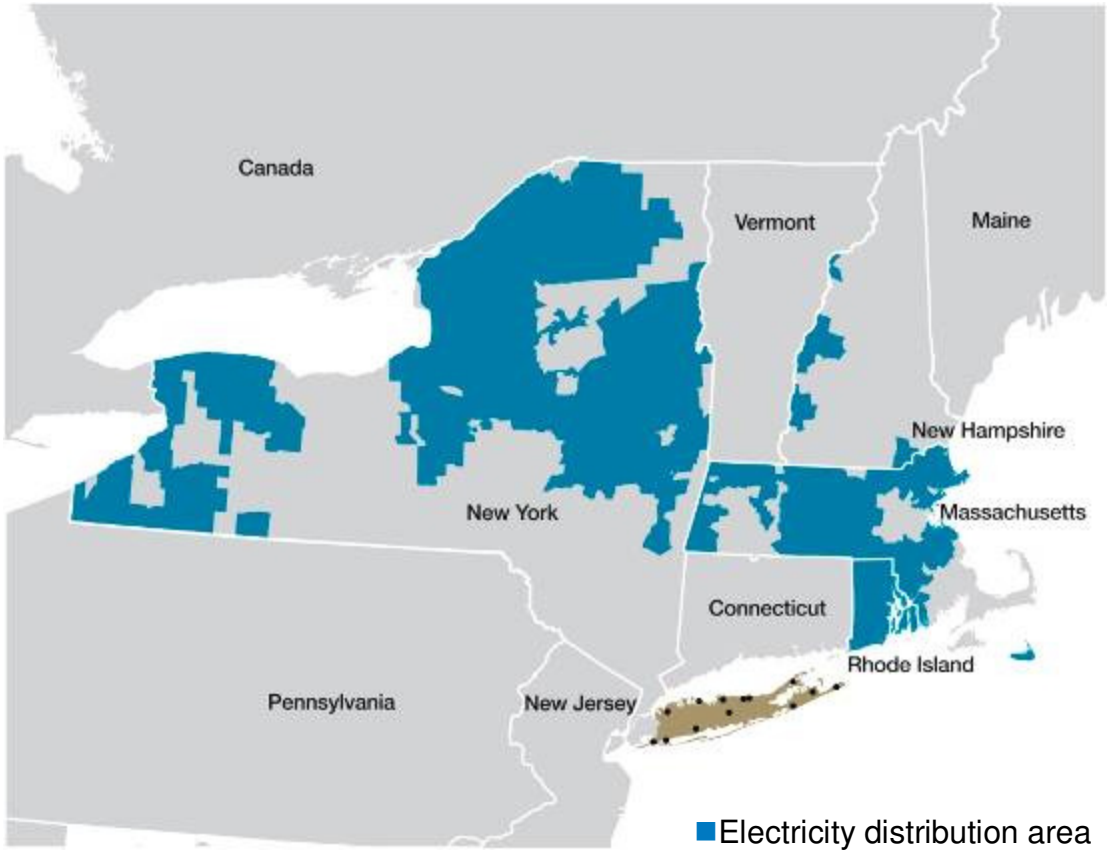
Electricity Distribution & Generation – operating area



- We supply electricity to approximately 3.4 million customers in the northeastern US
- We also own generation plants with a capacity of over 4,000 megawatts

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Our Transmission business - US

Transmission US – electricity networks

- In the US, we provide the transmission of electricity in the northeastern US as owner and operator of high voltage electricity transmission networks in upstate New York, Massachusetts, Rhode Island, New Hampshire and Vermont

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Our Gas Distribution business - US

Gas Distribution US – operating area

- In the US, our Gas Distribution business consists of gas networks in upstate New York, New York City, Long Island, Massachusetts, New Hampshire and Rhode Island
- Delivers gas to 3.5 million consumers

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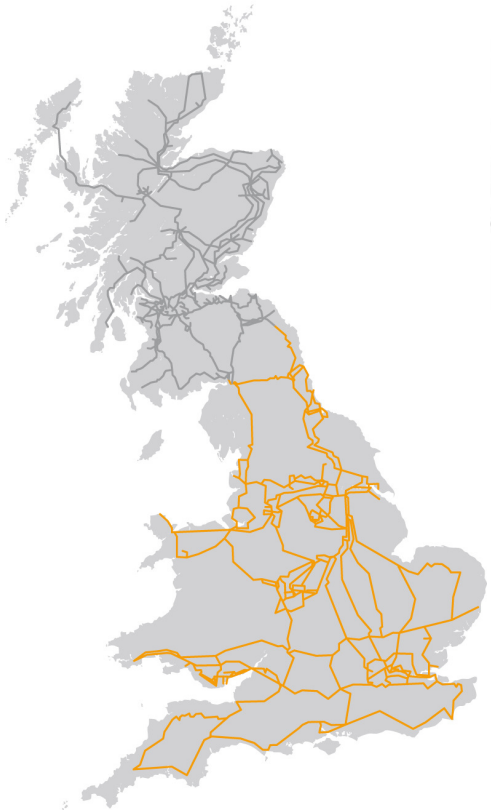
Our Transmission business - UK

Transmission UK – electricity system



Transmission UK – gas system

- In the UK, we provide the transmission of electricity and gas as owner and operator of the high voltage electricity transmission network in England and Wales, the gas national transmission system in Great Britain, electricity interconnector with France and storage facilities for LNG
- We also operate, but do not own, the electricity transmission networks in Scotland

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Our Gas Distribution business - UK

Gas Distribution UK – operating area

- In the UK, our gas distribution business comprises four of the eight regional gas distribution networks in Great Britain
- Owns and operates Britain's largest distribution business
- Delivers gas to almost 11 million homes and businesses

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Our commitment …

To the environment
To climate change
To customers
To community
To employees

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Our commitment to the environment

- Company-wide environment policy
- Includes explicit commitment to protect and enhance the environment
- Sets goals for continuous improvement and focuses on most important environmental issues and opportunities

National Grid
and the environment

We, at National Grid, will be the foremost international electricity and gas company, delivering unparalleled safety, reliability and efficiency, vital to the wellbeing of our customers and communities.

We are committed to being an innovative leader in energy management and to safeguarding our global environment for future generations.

Investing in, and operating a safe, and reliable gas and electricity supply network uses energy and raw materials, and produces waste. Our effect on the environment and the communities we serve depends on how we and our supply chain work.

We will face these challenges by deploying best practice throughout our operations, by engaging on national and international energy issues and by supporting renewable energy targets. We will show leadership by working with others to deliver a more sustainable future.

We are committed to:

- reducing the effect our activities have on the environment by considering whole life environmental costs and benefits in our business decisions
- using resources efficiently through good design, using sustainable materials, responsibly refurbishing existing assets, and reducing and recycling waste
- reducing the effect our business has on climate change by decreasing our emissions of greenhouse gases by 45% by 2010 and by 80% by 2050
- respecting the environmental status and biodiversity of the places we work, aiming to enhance areas for the benefit of local communities or the natural environment
- managing the risks associated with sites where we have responsibility for dealing with contaminations associated with past operations
- helping consumers reduce their dependency on fossil fuels by giving them access to more sustainable energy and through innovative energy efficiency programmes
- working with governments and regulators to help them develop and deliver more effective environmental policies and targets
- continually improving our management systems to prevent pollution, reduce the risk of environmental incidents, and comply with environmental laws, policies, charters and other commitments to which we subscribe
- making sure that our employees have the training, skills, knowledge and resources they need to meet our environmental commitments
- openly sharing our performance with employees, members of the public and others, and giving them the opportunity to comment on our performance
- requiring those working on our behalf to demonstrate at least the same level of commitment to the environment and creating a culture where best practice can be shared.

Steve Holliday
Chief Executive

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The power of action

April 2009

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Our commitment to climate change

- Embed target of 80% GHG reduction against 1990 baseline by 2050
- Reshaping markets by aligning regulatory and public policy incentives
- Help others to meet climate change challenge and embrace energy efficiency
- Business plan for carbon emissions reduction including:
  - Research and development
  - Adaptation studies
  - Design-in low carbon solutions
  - SF6 reduction group
  - Energy users group, fleet
  - Carbon budgets
  - Shadow price of carbon

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Our commitment to customers

- Massive customer base in both UK and US including;
  - Domestic and commercial consumers
  - Investors
  - Suppliers
  - Community
- Customer satisfaction is critical to our success
- When customers are happy, less complaints go to the regulator and helps us build a positive reputation within communities

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Our commitment to community

- Key part of our vision is supporting communities we serve
- Feedback from opinion survey is that employees place high value on community work and development opportunities it offers
- Community impact programmes fall under key themes of;
  - Energy and environment
  - Education and skills
  - Community investment
- Employee giving is how we provide financial support to employee charities

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Our commitment to employees

- Almost 28,000 employees worldwide
- Business relies on employees' skills to take advantage of opportunities to grow
- Comprehensive benefit and reward package for employees providing a wide range of health, lifestyle and protection benefits
- We invest in our people - career development opportunities and succession planning
- Strong focus on Inclusion and Diversity ensuring everyone feels their contribution is valued in the workplace

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Energy Efficiency Programs

Smart practices for Commercial, Industrial & Residential Customers

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Program Administration

- Utilities
- State agencies
- Quasi-state agencies
- Combination of the above

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Energy Efficiency

- **Vision**
  - Commitment to Energy Efficiency throughout National Grid Service Territory

- **Throughout our service**
  - National Grid's programs were created through the states' System Benefit Charges
  - Designed to reduce electricity usage and save customers on their electric bills
  - Foster local Economic Growth
  - Provide productive, comfortable, and healthy workplace and homes
  - Designed to provide incentives and solutions to our customers

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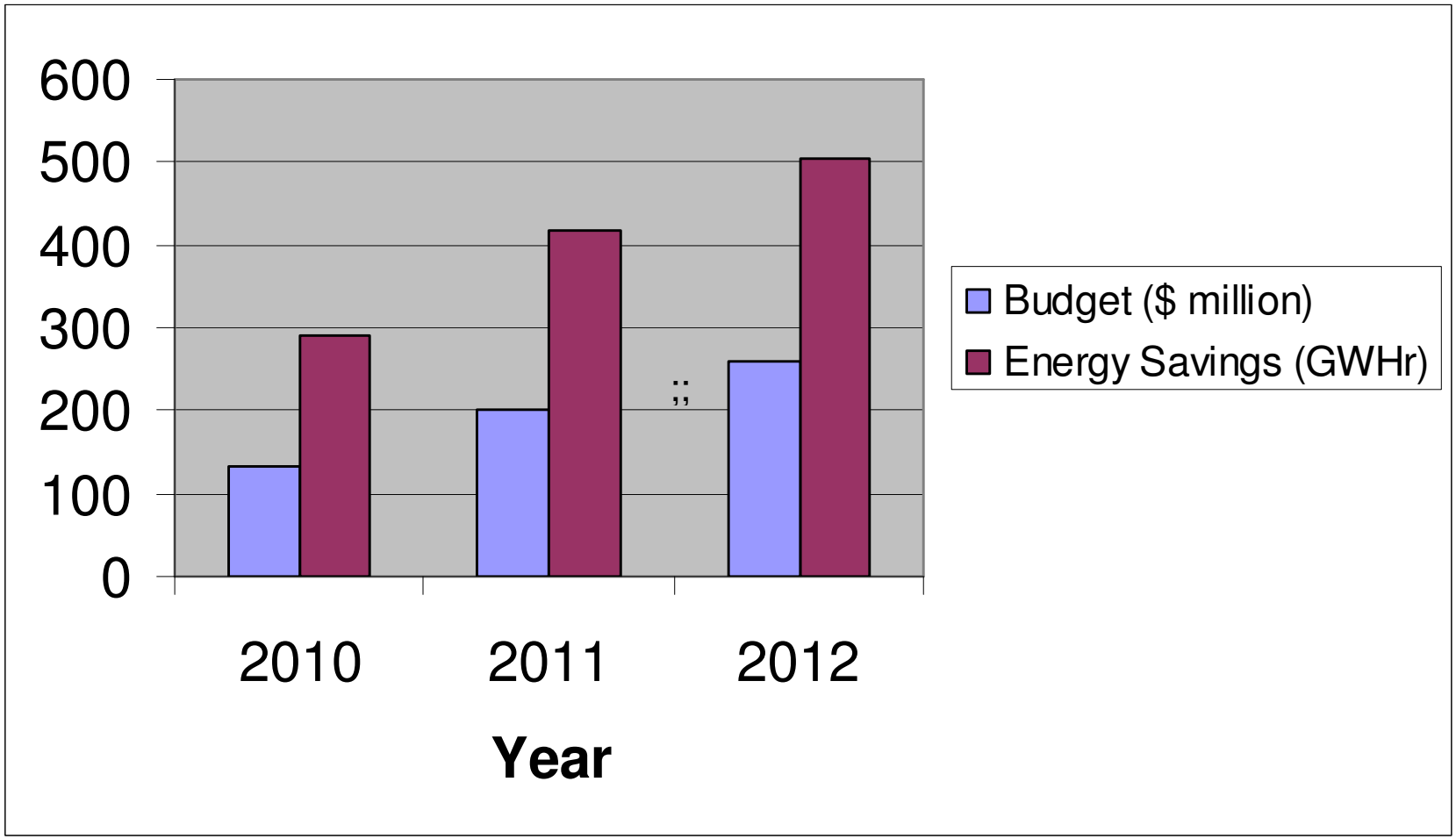
National Grid's EE program in Massachusetts



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Source of National Grid funds

- System Benefit Charge (SBC)
- Regional Green Gas Initiative (RGGI)
- Energy Efficiency Reconciliation Factor (EERF)
- Forward Capacity Market (FCM)

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Benefits of Energy Efficiency Programs

- Advance Public Policies
- Healthy relationship with regulators
- Save customers money
- Job creation
- Customer satisfaction
- Reduce GHG
- Financial Incentives to IOU
- Defer investment in the T& D infrastructure
- Provide opportunity for demand response and peak load shedding

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Successful Energy Efficiency programs

Key Factors:

- Mutual trust between utility and customers
- Knowledgeable sales force team
- Access to resources (technical, equipment, financial, etc.)
- Well managed relationship with vendors, engineers, architects, trades organization, and distribution channels

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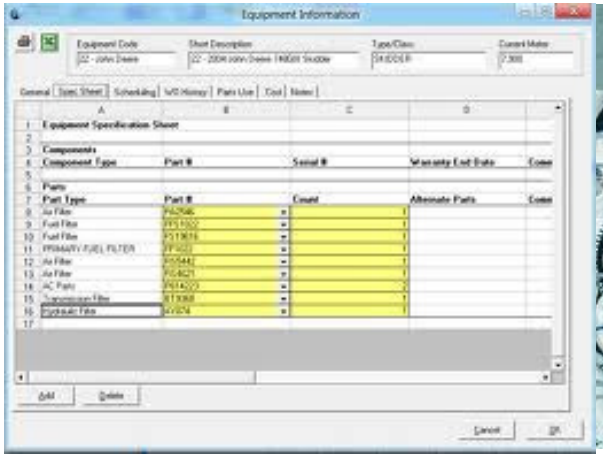
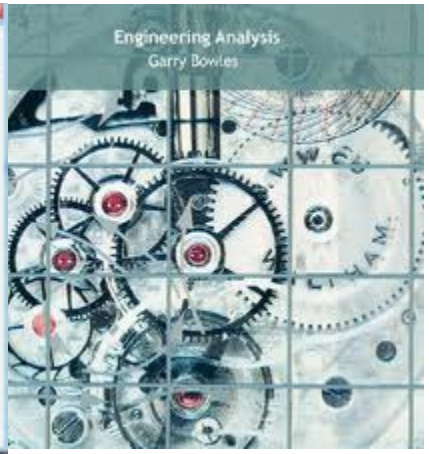
Steps to Successful Implementation of EE

- **Mining of opportunities**
  - New load on line
  - Vendors
  - Seminars
  - Direct relationship with customers
  - Direct Marketing campaign (bill inserts, TV and Radio ads)
  - Analysis of customer bills

- **Detailed Engineering Analysis**
  - Operating hours
  - Equipment specs
  - Schedule of operation and set points
  - Data loggers





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Steps to Successful Implementation of EE, cont.

- **Share findings with customer**
  - Identify payback, ROI, incentives, annual savings
  - Propose implementation plan based on priorities and benefits
  - Identify financing options (on bill repayment, third party financing)
- **Install Cost affective energy efficiency measures**
  - Not every energy saving measure is a cost effective measure
  - Interactivity and cross subsidization among the energy saving measures are crucial

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Steps to Successful Implementation of EE, cont.

- Commissioning
  - Is the equipment installed per the specs?
  - Are the schedules of operations programmed right
  - Is the BMS in place and people know how to operate it

- M&V
  - Is the equipment still in place? – (years after installation)
  - Is the equipment operating as it was intended?
  - Are the projected saving been realized?
  - Were an incentives paid for “free riders”?

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Conclusion

The Cheapest Energy is the Energy you Don't Use