

Smart Grid

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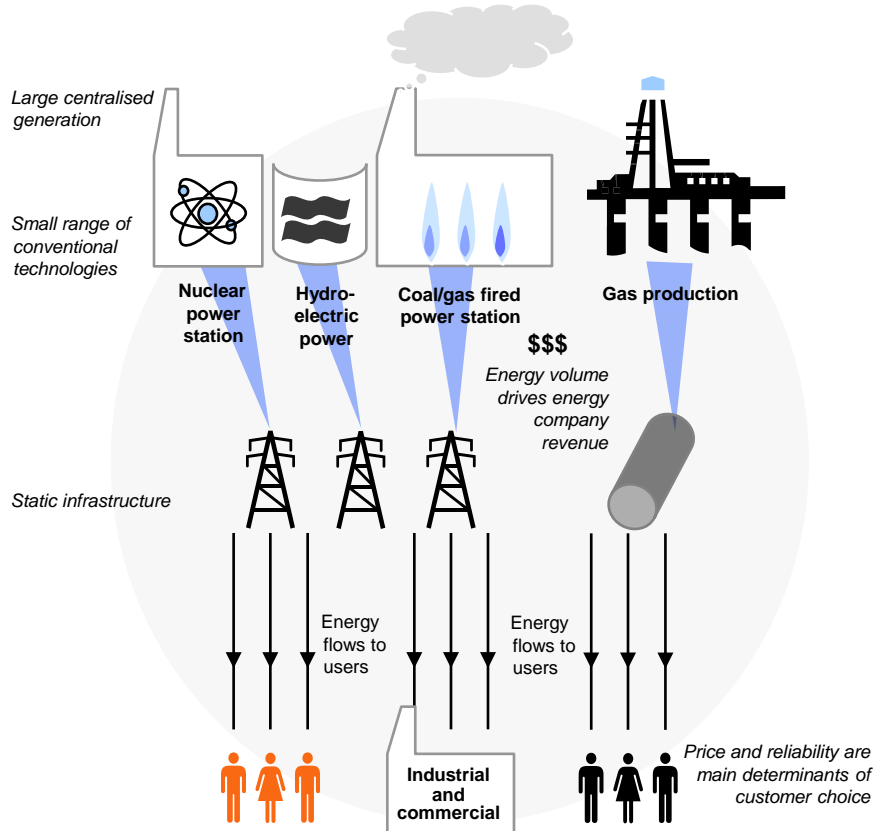
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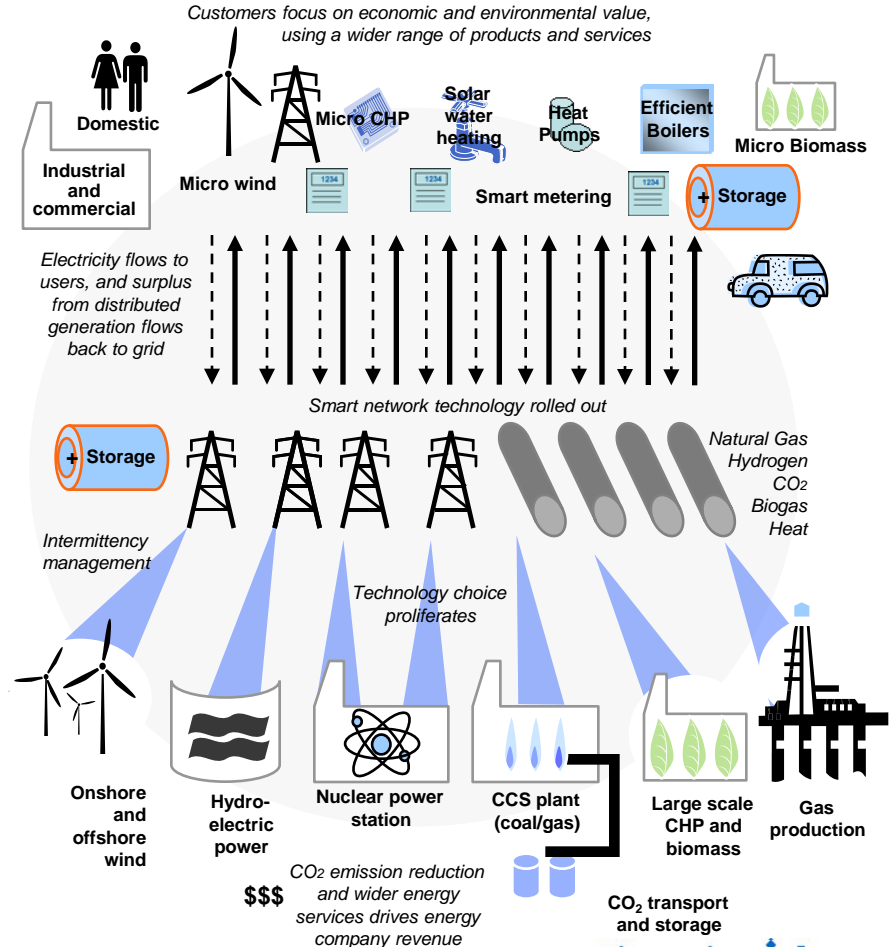
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The Smart Grid forms an essential part of our vision

Traditional Energy Market - supply driven



Today's Evolving Market - customer driven



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The ARRA – Smart Grid Incentive

The Stimulus legislation recognizes the potential impact of Smart Grid on the US Economy.

- \$4.5bn available on a 50% maximum matched basis - \$9bn of projects to be completed in the US within 5 years.
- Utilities bid in a competitive process to the DoE.
- Qualifying criteria and terms and conditions not currently known but expected by April 20th.
- National Grid planning to participate in a targeted fashion with all States we serve.
- Smart Grid – its not a question of IF but where and when.....

Our conclusion for the prime logic for Smart Grid? – Customer and Environmental Orientation.

The deployment of Smart Grid technologies will enable the shift in customer behavior towards Energy Efficiency, Energy Management and increase Customer Service levels.

With increasing volatility in energy prices, and climate change becoming a more prominent public concern, customer needs are changing.

Customers need the “tools” to play their part in the shift towards a new energy future.

The trend to increased consumer choice and control will be different for customers dependent upon their circumstances and needs – more segmentation will occur.

The “one ratepayer” approach to serving residential and small business customers must evolve, we will have to be more innovative to satisfy customers going forward.

Smart Grid will enable a new energy economy

Smart Technology Definition

Technology that provides advanced information, automation and control capabilities to help us to distribute, measure and use energy more efficiently, reliably, safely and sustainably – all the way from the point of generation to consumer appliances

What is Smart Technology?

Meter

- ♦ Meter that records interval data
- ♦ 2-way communications, remote configuration
- ♦ Informative display
- ♦ Meter Data Management System

Grid

- ♦ Sensors & measuring devices
- ♦ Analytical programs e.g. pattern recognition
- ♦ Automatic switches & controls
- ♦ Decision support tools & graphical interfaces

Home

- ♦ Customer portal & Home Area Network
- ♦ Automated thermostats, switches, plugs & appliances
- ♦ Load controllers e.g. PHEV controller

What does it allow you to do?

- ♦ Automatic meter reading
- ♦ Enable customer choice and control
- ♦ Choice of tariffs e.g. time of use – peak shifting
- ♦ Catalyst and validation of Energy Efficiency programs
- ♦ Remote configuration

- ♦ Enable Distributed generation
- ♦ Remotely detect, diagnose, predict and correct network problems & faults
- ♦ Condition-based, preventative maintenance
- ♦ Automatic fault prevention, isolation & restoration

- ♦ Automatically optimize selected home appliances
- ♦ Demand response programs
- ♦ Improve satisfaction levels

Clean Energy Technology “Modules”

National Grid proposes to add to the Smart Grid “Spine” with a series of clean energy technologies including in conjunction with its partners:

- Plug in Hybrid vehicles “PHEV”
- Energy Storage
- MicroCHP
- Wind
- Photovoltaic's
- Holonic Homes

This integrated approach provides a “blueprint” for how we envisage the energy market developing.

Conclusion

Smart Grid is a transformational investment.

Smart Grid will enable new services and relationships between market participants and their customers.

The ability to reflect costs in near real time has real opportunity to provide customers with dynamic contract options.

The Smart Grid can interact automatically with the network of assets that make up energy delivery infrastructure including facilities inside homes and businesses.

National Grid believes we are at the frontier of a new energy economy and wish to play a significant part in its creation and on going development.