

Smart Grid Consumers – International Approaches to Adoption and Support

Multinational Vendor
Perspective of Consumer
Engagement in the Smart Grid

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Honeywell Utility Solutions

Honeywell – Commitment to Smart Energy

\$12.2B



Aerospace
World's premier supplier of products for airlines, military aircraft, and spacecraft.

\$12.5B



Automation & Control Solutions
Global leader in solutions to make homes and buildings more efficient, safer and comfortable.

\$4.9B



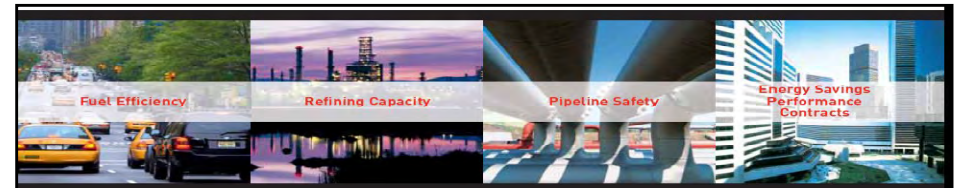
Specialty Materials
World leader in materials such as nylon and polyester that make lives better.

\$5.0B



Transportation & Power Systems
World's leading innovator of auto turbochargers and best known consumer automotive product brands.

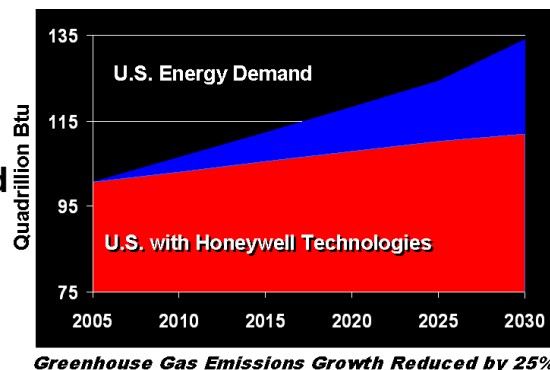
Diverse Businesses, Technologies and Products



"Nearly 50% of our product portfolio company-wide is linked to energy efficiency. We estimate the global economy could operate on 10-25% less energy just by using today's existing Honeywell technologies."



Honeywell Joins Clinton Climate Initiative
Global Effort Will Help Cities Address Climate Change by Improving Energy Efficiency



Honeywell's Potential Impact on Energy Demand and GHG Emissions

Green Technologies



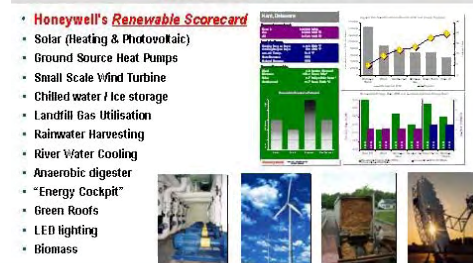
Biofuels: Next in a Series of Sustainable Solutions



Energy Efficiency Projects



Renewable Projects



Energy Consumption Continues to Rise

USA Energy Consumption

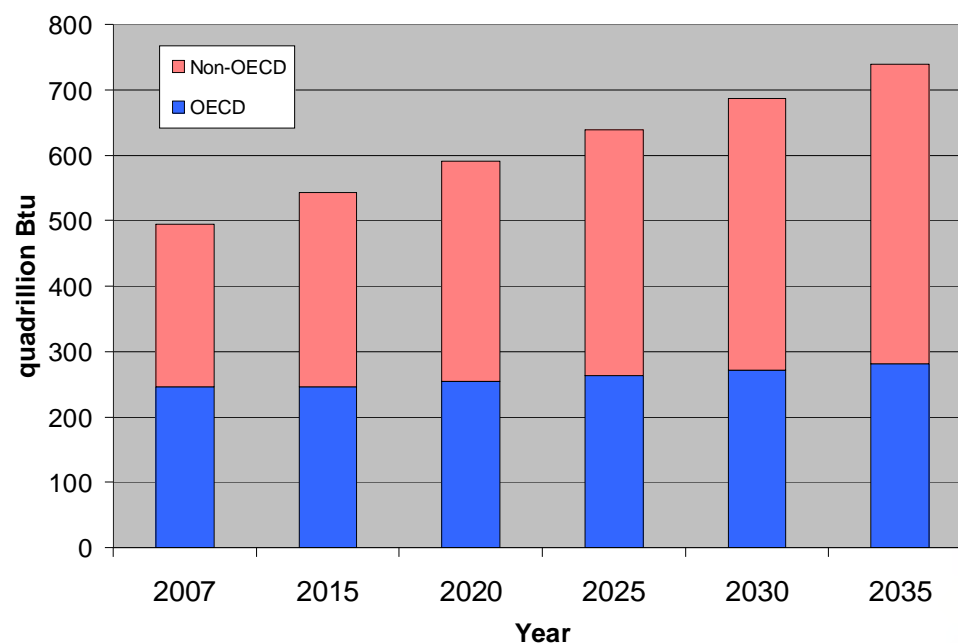
34%
growth
by
2030



100 Quads
1 quad= 172 million
barrels of oil

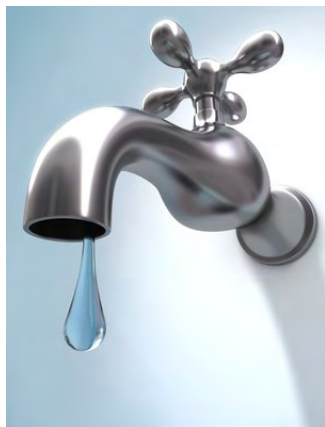
Globally, very strong growth

World Marketed Energy Consumption



Source: US EIA

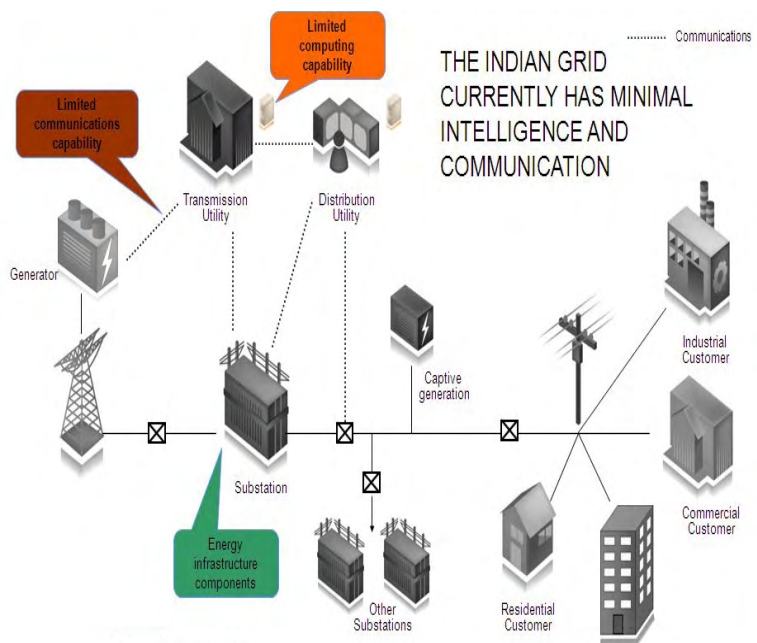
The Invisible Supply Chain



Demand Growth
Renewables
Consumer Awareness
Technology Advances
Energy Efficiency
Demand Response....



Although the Energy Drivers differ



Region	Key Drivers
Europe	Incorporation of high levels of renewables, empowering consumers to understand energy use, reducing carbon (20-20-20 push)
China	Robust grid to provide reliable energy to maintain industrial growth while improving energy efficiency and reducing emissions Bringing wind power from western to eastern China Integration of distributed renewable generation to create net-zero energy cities
North America	Strengthen grid for reliability and security Empowering consumers to better manage costs Energy Affordability: lowering costs via energy efficiency and demand response
India	T&D monitoring upgrades to account for usage Severe shortage of electric capacity giving rise to daily rolling blackouts Government program to reduce diesel used in backup generators

.....there can be common themes.

Residential "Smarts"



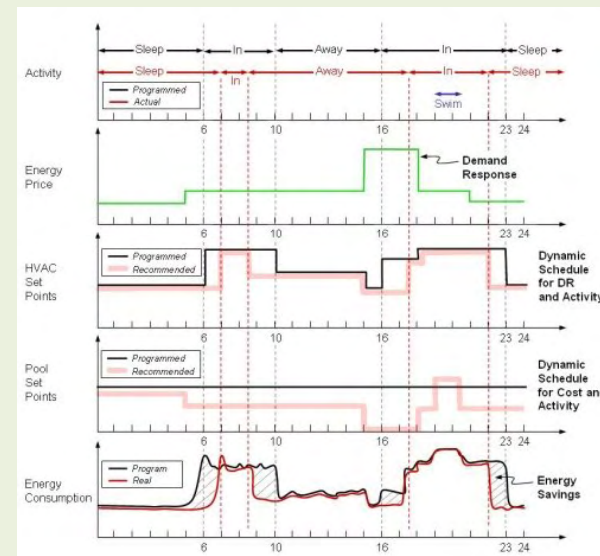
46% growth in size



Typical home has 27 electronic devices

Home Owner Values

- Personalized Recommendations
- Minimal complexity
- Mobile/convenience
- Demonstrable ROI
- Personal Control



Information and
decision support

Home Energy Management
a) coordination

Today

Two Years

Four Years

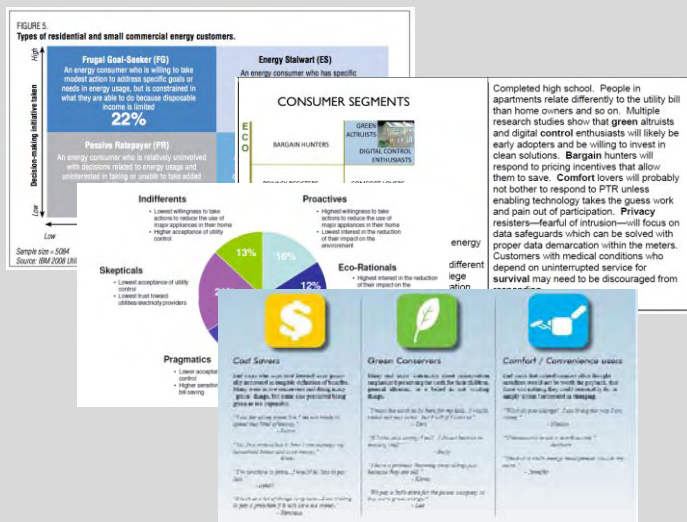
Raw data

Intelligent devices

b) PHEV, renewables , storage

Consumer Speak

Segmenting Customers is Key



Customer Needs Savings

- How will Smart Grid will save them money
- Largest perceived benefit of Smart Grid is lower bills (EcoPinion)
- Lower energy bill is the prime motivation for 88% of respondents worldwide (Accenture)

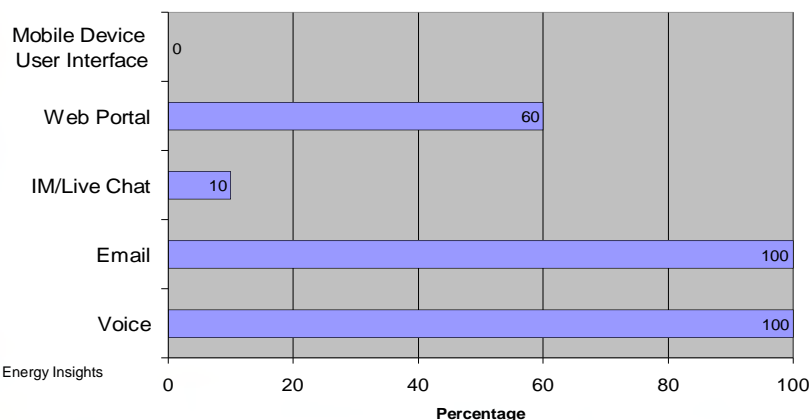
Information

- Needs to be simple and relevant
- Utility often seen as a natural advisor
- Consumers don't know they don't have detailed energy information

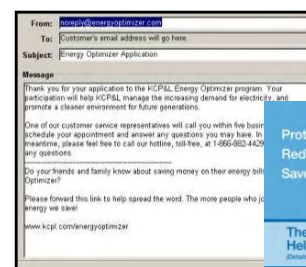
Control

- Negative association with "privacy" & "control"
- High automation = frustration

Communication Types Supported by the Utility Contact Center

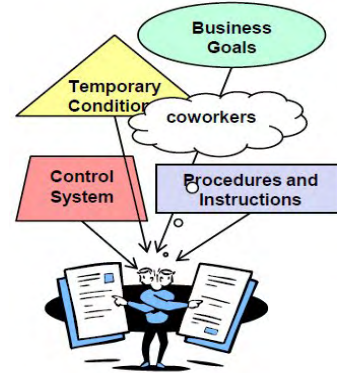


Expanding communication paths with your customers.



Impact of Smart Grid in Commercial

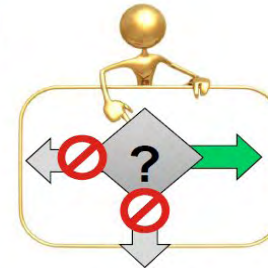
More systems
More data
More decisions
More to maintain
More work...



ACQUIRE



ANALYZE



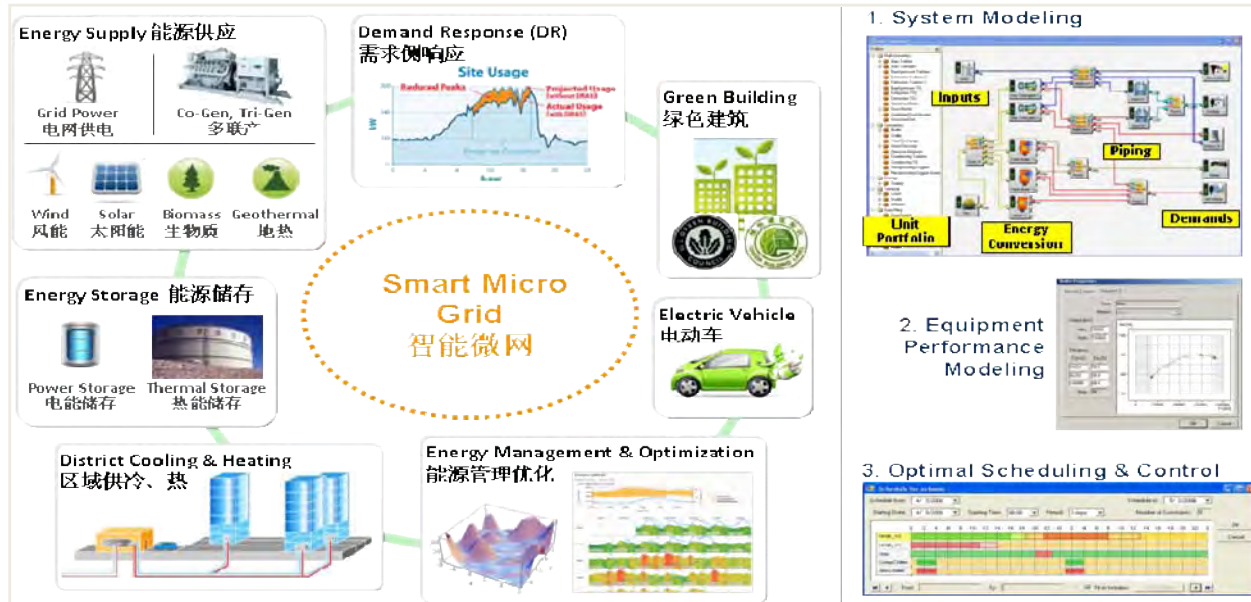
DECIDE



ACT

Automation can support personnel to **Acquire** and **Analyze** information, make **Decisions** in the right context, and **Act** effectively and consistently.

Based on Parasuraman, R., Sheridan, T., Wickens, C. A Model for Types and Levels of Human Interaction with Automation
IEEE TRANSACTIONS ON SYSTEMS, MAN, AND CYBERNETICS—PART A: SYSTEMS AND HUMANS, VOL. 30, NO. 3, MAY 2000



Providing:
Distributed
energy, Demand
side management
tools (e.g. DR),
Green buildings,
Thermal storage,
District cooling/
heating, etc.

Honeywell

Thank you.

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