Smart Home: The Human Side of the Smart Grid

The smart home is a new way of looking at the role energy plays in our lives and the evolving relationship between energy utilities and consumers.

At the turn of the century, electricity improved everyday life by supplying light after dark and providing power to machines. Today, the traditional home has appliances that are operated locally and manually, usually by flipping a switch or pushing a button. These devices have limited controls, and managing the energy they use can be difficult.

Billing can be confusing. Consumers receive electricity bills once a month, typically more than 20 days after they have used the service. The customer has no way to correlate the amount of money spent on electricity with how it was used. Furthermore, for those customers who have purchased renewable energy systems, such as solar units there's no ability to measure (and receive credit for) the value of energy produced from renewable resources.

The Smart Home: a New Way of Living, Smarter

The smart home represents the convergence of energy efficient, controllable appliances and real-time access to energy usage data. This integration of smart devices and smart grid enables customers to proactively manage energy use in ways that are convenient, cost effective, and good for the environment.

The smart home represents a new paradigm that merges energy distribution and communications, connecting the providers and the users.
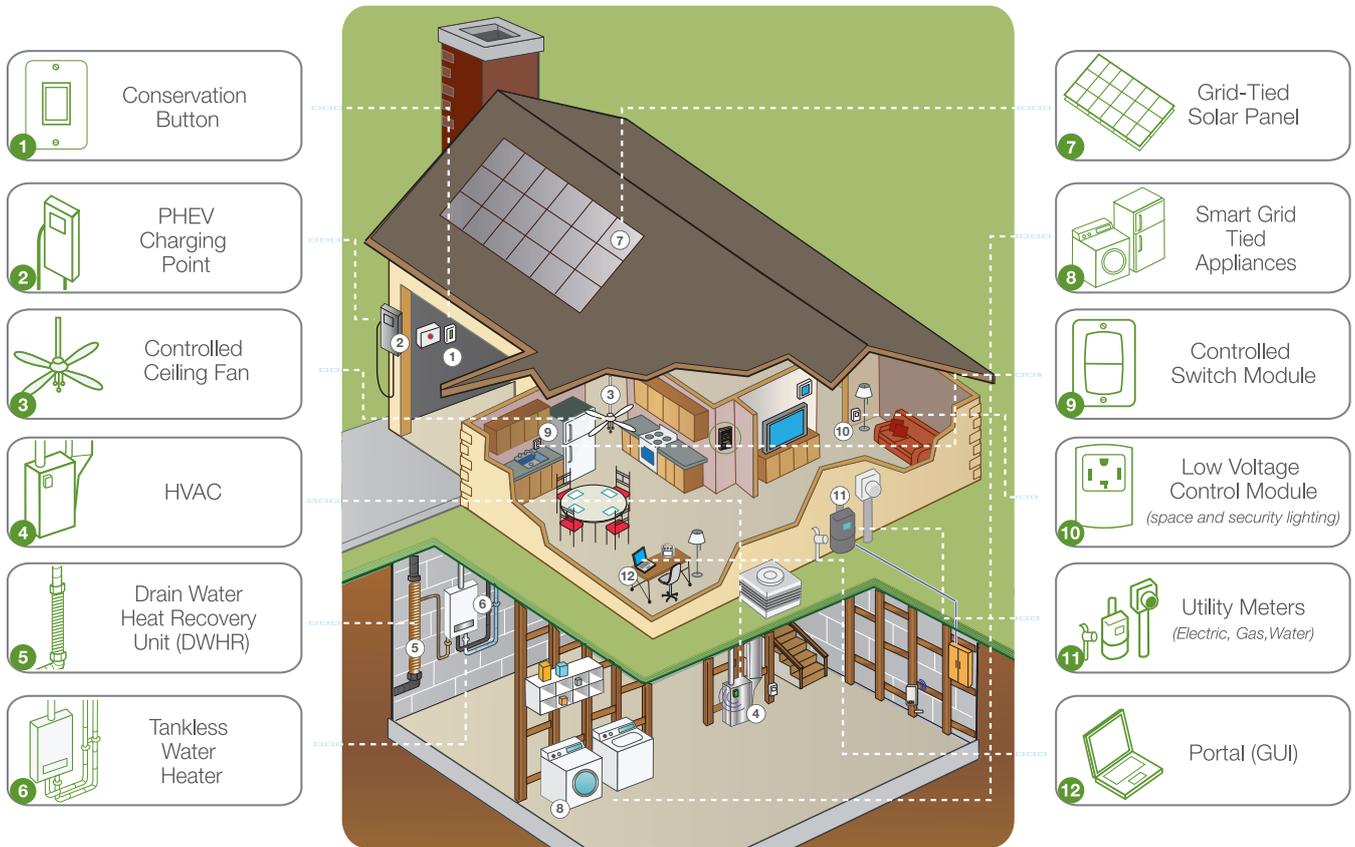
Smart homes satisfy customers through more efficient and cost-effective demand response programs, so that when customers want energy, it's there.

- **Customer portals** make it possible to monitor home appliances remotely, using the Internet and a computer or mobile device. Homeowners can access detailed information about their energy usage in hourly intervals. Appliances are monitored and controlled based on estimated energy costs per appliance and supported by a system of automated alarms and alerts.

- **In-home displays** enable customers to monitor energy usage by providing updated information about energy consumption. These advanced energy usage analytics provide insights that enable customers to manage energy use—and costs. The smart home also gives customers the ability to determine if energy has been delivered from renewable resources, and it enhances the ability to calculate and monitor their home's unique carbon footprint.

- **Automated household appliances** in a smart home are controlled based on customer preferences, and they can be placed in modes that match the homeowner's daily routine.

- **Advanced intelligence** enables consumers to use "real-time" energy budgeting to manage the dollars spent on energy in any given day. Smart homes are able to fine-tune the system to match usage habits.

- **Communication with the utility** is made possible through messages sent via the customer portal. These messages could include energy saving tips and weather warnings, as well as updated information about when power outages will be restored.

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1 Conservation Button

2 PHEV Charging Point

3 Controlled Ceiling Fan

4 HVAC

5 Drain Water Heat Recovery Unit (DWHR)

6 Tankless Water Heater

7 Grid-Tied Solar Panel

8 Smart Grid Tied Appliances

9 Controlled Switch Module

10 Low Voltage Control Module *(space and security lighting)*

11 Utility Meters *(Electric, Gas, Water)*

12 Portal (GUI)

Smart Metering, Smart Grid, Smart Home

In the days to come, potential new lines of business for utilities will include installing and managing the customer equipment that makes the smart home possible. Capgemini supports the smart home through technology due diligence and testing, home area network and local area network technical expertise, customer value proposition analysis, and systems and applications integration. The smart home works together with the smart meter and the smart grid—it is the fundamental unit of consumer interaction with the utility.

Using smart technology, the day-to-day decisions consumers make about how they plan to use energy is shaping the nature of their interaction with utilities and is preparing the way for a new era in customer relationships.

Why are Capgemini's Smart Energy Services Unique?

Capgemini's Smart Energy Services are real, in the market now, and already making a difference for utilities around the world. We support utilities and their customers by delivering sustainable energy efficiency and environmental solutions—transforming utility operations and customer fulfillment. Our commitment is strong with more than 7,000 professionals dedicated to the utility sector.

Capgemini's Smart Energy Services:

- Have extensive utilities industry experience with an unequaled track record for successful innovation and delivery. We offer our clients lessons learned and a growing knowledge base

- Lead the industry in the delivery of smart energy solutions in mass deployment and production

- Offer a unique, turn-key solution called Managed Business Services, which has a usage-based pricing model

- Offer strategic relationships and delivery experience from an ecosystem of long-standing global technology partners

For more information about Smart Energy Services, please visit www.capgemini.com/smartenergy.

Smart Energy Services—Experience Reduces Risk

Capgemini's Smart Energy Services (SES) provides the full spectrum of smart metering, smart grid, smart home and smart analytics solutions through leveraging best practices developed over the last 10 years working alongside the world's leading utilities. Our team has extensive utilities industry experience with an unequaled track record for successful innovation and delivery. We are helping over 43 million utility customers by delivering sustainable energy efficiency and environmental solutions—transforming utility operations and the customer experience. Our commitment is strong with more than 8,400 professionals dedicated to the utility sector. More information is available at **www.capgemini.com/smartenergy**

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With EUR 670 million revenue in 2011 and 8,400 dedicated consultants engaged in Utilities projects across Europe, North & South America and Asia Pacific, Capgemini's Global Utilities Sector serves the business consulting and information technology needs of many of the world's largest players of this industry.

More information is available at **www.capgemini.com/energy**

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