

Unlocking the Transformational Power of the Consumer, Business and Markets to drive a more resilient and greener grid.

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Business and the Consumer are ready to facilitate a more resilient and greener grid

- **Whirlpool customers “don’t care about technology,” he says. “They just want their washers to wash better.”**
 - Quote from Jeff Fettig, Whirlpool Corporation CEO, Barron’s March, 7, 2015
- They do care about energy savings.... Whirlpool has teamed with Nest Labs, a maker of smart thermostats owned by Google, on a washer and dryer that not only can be operated remotely, but also incorporate energy-usage-gathering data that can translate into savings on utility bills. Such innovation helped Whirlpool win six awards at the 2015 Consumer Electronics Show, underscoring the promise of the Internet of Things in the home-automation category.
- Whirlpool also has partnered with Purdue University to pursue energy-efficiency initiatives. Several graduate engineering students in the company’s leadership-development program have been living since last year in a 1920s bungalow near Purdue’s campus called ReNEWW house, and have been charged with transforming it into a “superefficient” home that produces as much energy as it consumes. The project will run until 2018.
- **April 29, 2013 Whirlpool Corporation Reaffirms Commitment to Smart Home Solutions**
 - Flagship brand puts home management in the palm of your hand with smart appliances
 - BENTON HARBOR, Mich., April 29, 2013 -- Global appliance leader Whirlpool Corporation continues its legacy of leadership in sustainability with the launch of a line of smart appliances with 6th Sense Live™ technology. The company's flagship Whirlpool brand will make smart home management a reality this month in the Chicagoland area with the release of a suite of smart appliances along with a free mysmartappliances app which is available in the iTunes app store now.
- **But the potential remains so much greater:**
- **Whirlpool commits to 2015 grid-compliance, but waiting for standards** May 12, 2009
- Home appliance maker Whirlpool has announced a commitment to make all its wares Smart Grid compliant by 2015 if standards are developed by 2010.
 - Speaking at the 2009 Energy Efficiency Global Forum & Exposition in Paris last month, Whirlpool Europe president, Bracken Darrell, said: “by 2015 we are prepared to make ALL the electronically controlled appliances we produce, ANYWHERE in the world, capable of receiving and responding to a signal requesting curtailment of the appliance’s energy consumption.
 - “These products will also be capable of providing the consumer with contemporaneous information about their energy consumption. Whirlpool would also require any manufacturer that is licensed to use the WHIRLPOOL brand to add similar capability to products bearing the WHIRLPOOL brand,” he added.

What has been missing?

- Ubiquitous demand response and facilitation of the consumer preference (all other things being relatively equal) for greener power, if given the choice, is being prevented by our legacy regulatory model and incentives
- Utilities are rewarded for serving peak demand and are not rewarded for filling in intermittent renewable valleys.
- Two simple incentives would lead to the manufacture and sale of tens of millions of demand response capable devices. These devices would also materially affect energy consumption by increasing the visibility at the user level of real time energy cost of their choices and options for type of generation they preferred and time of occurrence of the activity
- Point of purchase incentives (rebates)
- Meaningful and variable real-time pricing, even to specific devices (“this smart refrigerator will save you \$XX/yr by defrosting at night, and can be programmed to defrost with renewable energy if your utility can tell it when it is available”)

Other Encouraging Macro trends



The top of a Perris warehouse-distribution center will become home to what is being called the largest individual rooftop solar project in the United States. The Perris solar project is expected to generate about 10 megawatts of power, enough electricity to supply 5,200 homes in perpetuity.



Findlay Wind Farm is an \$18 million “Wind for Industry” project, financed by One Energy, that provides energy for large electric consumers.

Whirlpool Corporation Announces Plans to Use Wind Turbines to Power Findlay, Ohio Facility

The Findlay Wind Farm is an \$18 million “Wind for Industry” project, financed by One Energy, that provides energy for large electric consumers. On-site wind generation is designed to reduce an industrial facility’s electric consumption from the grid.

Officials said the wind farm will have five wind turbines, with Whirlpool utilizing two and the nearby Ball Co. using three. The turbines are expected to offset about 22 percent of Whirlpool’s electric consumption, while producing zero greenhouse gas emissions.

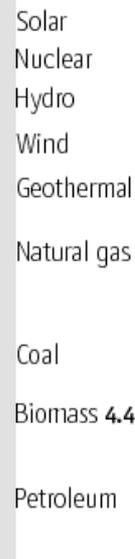
The way we live now

Energy

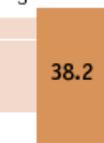
Consumption by type, 2013
% share of total



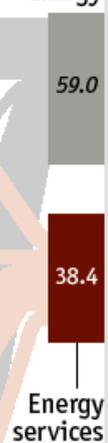
United States' use*, 2013
quadrillion BTUs



Electricity generation

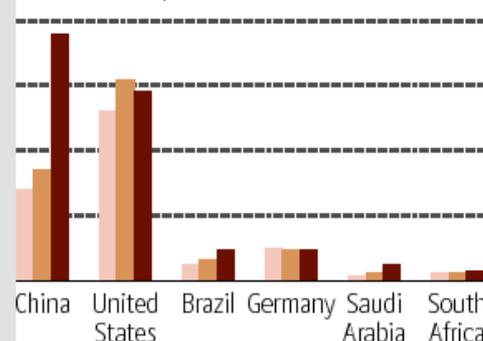


Wasted energy



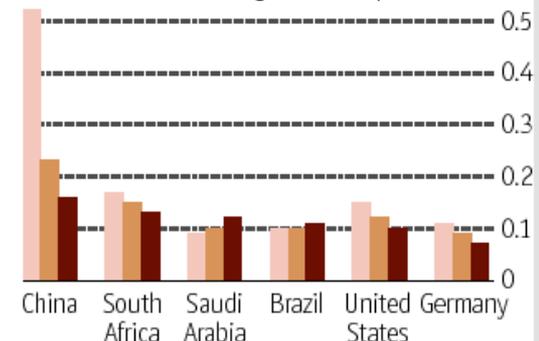
Consumption

tonnes of oil equivalent, bn



Intensity

kilograms of oil per unit of GDP†



Sources: BP; Sanford C. Bernstein; LLNL; Enerdata

*Estimate †Purchasing-power parity

In the Commercial and Industrial Sectors there remain tremendous opportunities to eliminate wasted energy, support sustainable energy markets and even directly generate on site sustainable energy