

Smart Home Energy Systems and Cloud Services



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Authors/Contributors: Mareca Hatler, Darryl Gurganious, and Charlie Chi Ph.D

Phone: 858-259-2397

Fax: 858-259-8748

eMail: research@onworld.com

Website: <http://www.onworld.com>

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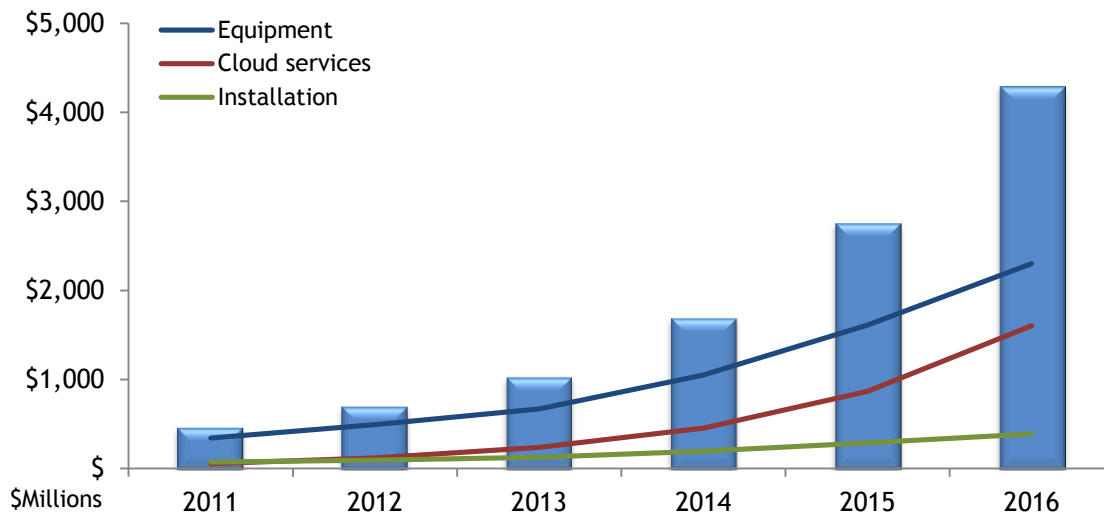
Executive Summary

Cloud service platforms enabled by sensor networks, a growing IP infrastructure and widespread smart mobile devices are bringing home energy management solutions to the mass market. Accelerating Smart Grid initiatives and a large web-centric developer community are expanding the Home Area Network (HAN), creating a robust home energy ecosystem. By the end of 2012, there will be over a million managed Smart Home systems installed in North America. For some service providers, energy management adoption rates are as high as 40 percent.

The strategy of moving home energy intelligence into the cloud is disrupting the Smart Home market. Since our last report in 2010, home energy systems and services have emerged in multiple channels and are deployed in myriad HAN architectures.

In 2016, global home energy management revenues will surpass \$4 billion. Cloud services will be the fastest growing segment, increasing by a factor of 30 at this time.

Figure 1: Global Home Energy Management Revenues by Segment (2011-2016)



Source: ON World

For this report, we surveyed 900 individuals across the home energy value chain including consumers, utilities, home service providers and developers. We identified dozens of new entrants and our patent investigation illustrates that more are on the way. The future of home energy management will be a diverse mix of networks, devices and competitors. Networking innovations, ZigBee Smart Energy 2.0, OpenADR, and data privacy and security standards are increasing opportunities for Smart Grid integration.



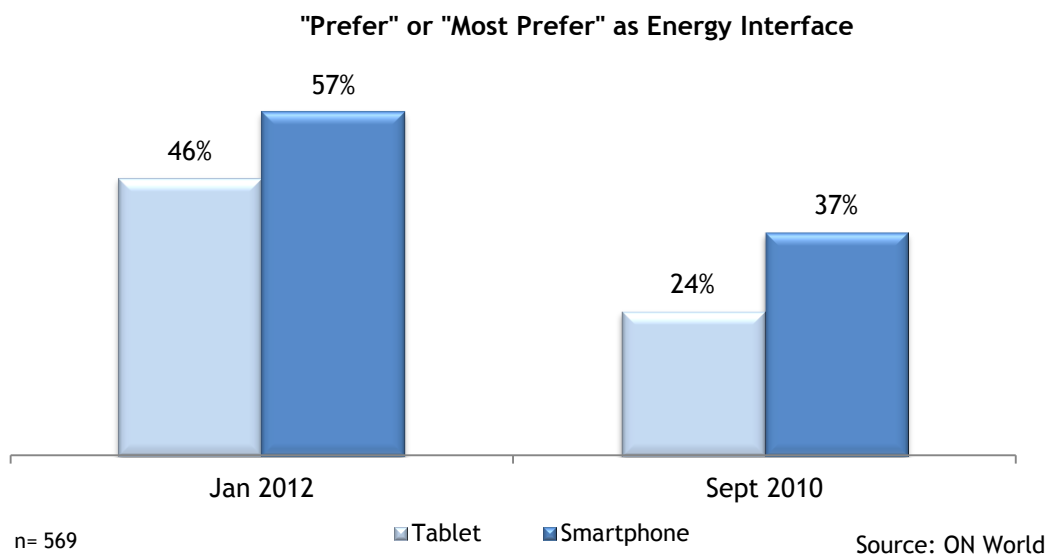
Our research found several trends that are driving adoption for home energy management (HEM) today include the following:

Integration with Smart Mobile Devices

Widespread adoption of mobile devices such as smartphones and tablets is one of the major enablers for smart home and energy management systems. Nearly all major home automation and cloud platform providers have mobile apps and this trend is growing. Real-time energy monitoring systems using gateways and bridges are increasingly being used with smartphones and tablets.

Compared with our last survey of early technology adopters in 2010, almost two times as many of the respondents¹ in our current survey, completed in January 2012, indicate that they would prefer to use their tablet or smartphone as their energy display or interface.

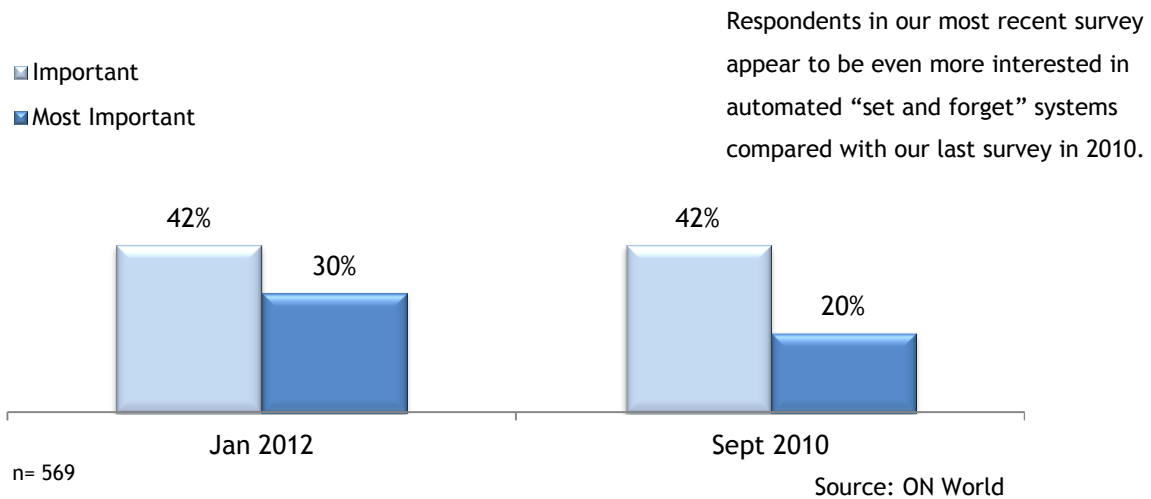
Figure 2: Early Adopters - Preference for Existing Mobile Devices for Energy Interface



Another growing trend is the development of “set-and-forget” solutions that save energy for consumers with minimal effort. Over 70% of the survey respondents indicate that “automated systems that require minimal time/effort” are an important consideration for HEM products and services.

¹ Note: The surveyed consumers all have broadband, smartphones and incomes over \$75,000.

Figure 3: Early Adopters - Preference for Automated Systems



Intelligent Cloud Services

Cloud energy platforms are becoming even more intelligent and innovations with data mining and advanced analytics will be the key differentiator. Cloud services are expanding, illustrated by recent acquisitions by AlertMe and Tendril as well as alliances between EcoFactor and Comcast, EnergyHub and Radio Thermostat, Tendril and Vivint, and AlertMe with Lowe's.

Our patent investigation found over 100 recently filed applications on integrated home energy controllers, multi-protocol smart energy devices, remote processing and advanced data analytics. Many of the recently filed patents and latest products use contextual data such as location, occupancy, building characteristics, and user behavior in order to optimize energy savings and load management.

Convergence between the mobile/consumer and automation industries is accelerating. Examples include Allure Energy’s proximity based smart thermostat, Internet-enabled thermostats by 3M, Ecobee, Energate and Nest Labs as well as cloud energy service platforms by AlertMe, EcoFactor, EnergyHub, GreenWave, IJENKO, Tendril and There Corporation. Honeywell’s recently filed patent lawsuit against Nest illustrates the challenges.

Our survey with retail companies such as Best Buy, Home Depot and Lowe’s found that sales for energy management systems has accelerated over the past year and cloud based home monitoring services will soon be available through this channel as well.



Report Scope & Methodology

This report covers the global market for Home Energy Management systems and services. ON World has researched smart network technologies for the Smart Home, Smart Grid and energy management for the past decade. Our methodology uses a combination of primary and secondary research with an in-depth analysis of the market forces across the whole value chain that includes the following:

Data Collection/Investigation: Surveys/interviews with nearly 1000 individuals including:

- 569 most likely early adopting consumers
- 270+ utilities/energy retailers, home service providers, retail outlets, installers
- 100+ manufacturers, software developers, AMI vendors, suppliers, industry groups, etc.
- Analysis of 400+ AMI/smart meter initiatives worldwide
- Thousands of secondary sources (e.g. 3rd party research, press releases, annual reports...)

Market Segmentation:

- Target markets: North America, Western Europe, Asia Pacific, and Rest of World
- Channels: Custom installer, Home services, Utilities/energy retailers, Retail
- Devices: Smart thermostats, energy displays, gateways, load devices, smart appliances
- System types: Energy Monitoring, Home Monitoring, Automation
- Market segments: Equipment, Custom Installation, and Cloud Services

Competitive Forces:

- Product segmentation and value chain analysis
- Evaluation of business models and distribution channels
- Analysis of current products, services, pricing and competitive landscape
- Vendor rankings on disruption and sustainability in the major product segments

Technology Dynamics:

- Standards developments, technology adoption and emerging technologies
- Analysis of HAN technologies' performance, pricing, functionality, potential for disruption
- Software simulations to compare HAN technologies
- Intellectual property evaluation

Market Forces: Analysis of the current market forces in each geographical region include but are not limited to the following:

Economic:	Energy pricing, economics/financials, and psycho-demographic factors
Psycho/social:	Consumer adoption trends, demographics and other psychographic factors
Legislation:	Governmental legislation, technology requirements, and funding
Channels:	Product/service availability, business models, service provider drivers...
ROI/switching cost:	Return on investment & costs for alternatives including not adopting

Forecasting: Market size projections are based on all of the above as well as data modeling and other quantitative and qualitative forecasting techniques from a conservative, moderate and aggressive viewpoint (described in more detail in the full report).



ON World Inc.
Emerald Plaza Center
402 West Broadway
Suite 400
San Diego, California 92101

ON World provides world class business intelligence on smart technology markets. Founded in 1996 in the San Francisco Bay Area, ON World is headquartered in San Diego, California.

For more information, please call us toll free at 888.312.2619
International callers: 858.259.2397

Email us at:
research@onworld.com