Smart Metering in North America and Asia-Pacific

Smart Metering in North America and Asia-Pacific is the second consecutive market report from Berg Insight analysing the latest developments for smart metering in two dynamic regions.

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- **Case studies** of smart metering projects by the leading energy industry players in North America and Asia-Pacific.

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- **Status updates** on the development of smart grid and communication technology.

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BERG INSIGHT

Smart meters spread through North America and Asia-Pacific

Smart grid is one of the latest buzzwords in the energy sector and has become a catch-phrase for politicians, academics and industry leaders alike. The vision is to exploit the latest technology to address the immense challenge of securing the energy supply in the 21st century. The concept of smart grids is at times put forward as a revolutionary solution to a wide array of problems, ranging from the West's dependency on Middle Eastern oil to global warming. A more realistic expectation is however that smart grid technology will contribute to improved efficiency and reliability in energy distribution and better optimisation in allocation of resources and utilisation of assets.

Smart metering is widely regarded as the cornerstone for future smart grids. In the history of metering technology, smart metering represents the third stage in a chain of developments spanning more than 100 years. Manually read meters have been around since the advent of the utility industry in the late 19th century. Over the last three decades, automated meter reading (AMR) based on one-way or two-way communication has evolved. Smart metering broadens the scope of AMR beyond just meter readings with additional features enabled by two-way data communication. A smart metering solution generally delivers a range of applications using an infrastructure comprising networked meters, communication networks and data collection and management systems.

Smart electricity meters are being introduced all over the developed world. North America and Asia-Pacific are two of the most dynamic market regions that will see massive projects realised over the next five to ten years. Berg Insight forecasts that the installed base of smart electricity meters in North America will grow at a compound annual growth rate of 22.5 percent between 2010 and 2016 to reach 87.4 million units at the end of the period. Asia-Pacific is projected to see the installed base of smart meters soar from a low level to 378.1 million units by 2016.
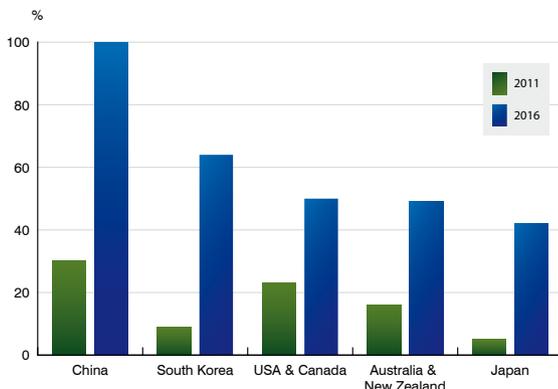
North America has the world's highest penetration of automatic meter reading, exceeding 50 percent. Over the past years, many of the largest utilities in the US have embarked on ambitious smart grid schemes where one of the main objectives is to deploy second generation advanced metering infrastructure. AEP, PG&E, Southern California Edison, Southern Company, Florida Power & Light and Oncor are some of the largest utility groups having committed to full-scale rollouts to all customers. Furthermore there are numerous projects ▶

▶ among medium sized and small utilities throughout the country. National and state policies play a major role in shaping developments. The US market received a major boost through the Obama Administration's American Recovery and Reinvestment Act that includes US$ 43 billion ear-marked for the energy sector plus tax incentives. A number of states, including California, Texas, Florida and Pennsylvania have approved utility plans for massive smart meter deployments, while others such as Virginia have turned down major project proposals. In Canada, the provinces of Ontario and British Columbia have introduced mandatory requirements for smart electricity meters for all customers. Hydro-Québec announced Canada's largest project to date in 2011, involving 4.0 million metering points.

East Asia is in the earliest phase of the adoption of smart metering technology. Large-scale rollouts to residential customers have only recently begun in Japan and South Korea, while China remains in the piloting stage. National and industry leaders do however have clear visions for the adoption of the technology over the course of this decade. South Korea has adopted a national plan for the construction of a smart grid by 2020. Japan already has the world's most advanced power grid monitoring systems in place and several of the leading utilities have announced plans for smart meter deployments over the next ten years. China is investing massively in the expansion of the nation's energy infrastructure to keep up with the rapidly increasing power demand. The country has begun deploying a new generation of more advanced electricity meters, which are prepared for two-way communication. China has however not yet decided on any final standards for smart grid networking. Although the country is on track to reach near 100 percent penetration for smart meters that support communication by 2015, there is not yet any infrastructure in place to network them into a nationwide smart grid. Australia and New Zealand began massive installations of smart meters at the end of the last decade. Adoption is driven by regulations in the case of Australia and by the main industry players in New Zealand.

Projected penetration rates for smart electricity meters in North America and Asia-Pacific

This report answers the following questions:

- How are national energy policies driving the adoption of smart metering?
- What new smart metering projects have been enabled by the US federal stimuli funds?
- What are the plans for smart meters deployments in British Columbia and Québec?
- When will China start the construction of a nationwide smart metering data network?
- What is the role for smart metering in South Korea's national smart grid plan?
- What is the current status for smart metering in Japan?
- What is driving adoption of smart meters in Australia and New Zealand?
- Who are leading the race for market leadership in North America?
- Which are the main providers of PLC and wireless communication technology for smart meters?
- Which are the emerging top players in the Chinese smart metering industry?

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About the Author

Tobias Ryberg is co-founder and principal analyst responsible for the M2M research series. He is an experienced analyst and author of numerous articles and reports about telecom and IT for leading Swedish and international publishers. The Smart Metering market has been his major research area for the past 9 years.

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BERG INSIGHT

Half of Europe's households will get smart meters by 2016

Smart grid is one of the latest buzzwords in the energy sector and has become a catch-phrase for politicians, academics and industry leaders alike. The vision is to exploit the latest technology to address the immense challenge of securing the energy supply in the 21st century. The concept of smart grids is at times put forward as a revolutionary solution to a wide array of problems, ranging from the West's dependency on Middle Eastern oil to global warming. A more realistic expectation is however that smart grid technology will contribute to improved efficiency and reliability in energy distribution and better optimisation in allocation of resources and utilisation of assets.

Smart metering is widely regarded as the cornerstone for future smart grids. In the history of metering technology, smart metering represents the third stage in a chain of developments spanning more than 100 years. Manually read meters have been around since the advent of the utility industry in the late 19th century. Over the last three decades, automated meter reading (AMR) based on one-way or two-way communication has evolved. Smart metering broadens the scope of AMR beyond just meter readings with additional features enabled by two-way data communication. A smart metering solution generally delivers a range of applications using an infrastructure comprising networked meters, communication networks and data collection and management systems.

Smart electricity meters are being introduced all over the developed world. Europe had an early start in the 2000s when Enel completed the first nationwide rollout of smart meters to more than 30 million customers in Italy. Later deployments followed in the Nordic countries and at the beginning of the 2010s, Spain, France and the UK are assuming the positions as the most active markets. Berg Insight forecasts that the installed base of smart electricity meters in EU23+2 will grow at a compound annual growth rate of 19.4 percent between 2010 and 2016 to reach 130.5 million units at the end of the period. Annual shipments of smart electricity meters are anticipated to exceed 20 million units in the mid-2010s.

A majority of the countries in Western Europe have adopted a policy of regulation-driven introduction of smart meters. Italy and Sweden were first to complete their rollouts that began in 2001 and 2003 respectively. Finland and Norway will require smart meters for all electricity customers by 2013 and 2016 respectively, while France, Spain, the UK and Ireland have set targets to achieve full penetration in ▶
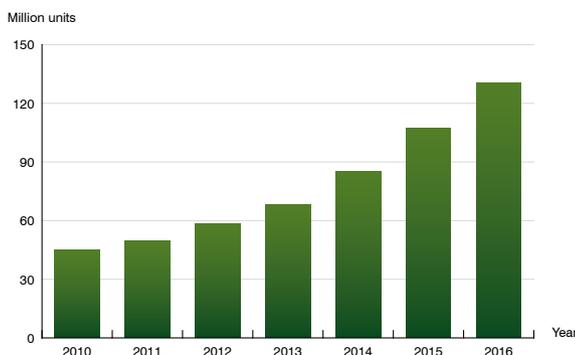
▶ the final years of this decade. That will also be the case in the Netherlands, where the plans to introduce smart meters met strong opposition on the grounds of being invasive to privacy and were delayed for several years before they were finally approved by the parliament in late 2010. Germany on the other hand has only implemented some weaker regulatory drivers and the federal government has declared that it has no intention to push for a quick nationwide rollout.

Iberia is the new focal point for smart metering in Europe. Following a build-up phase in 2010, massive installations will take off in Spain during 2011, as Endesa goes ahead with a full-scale rollout. Iberdrola is performing major pilots involving hundreds of thousands of customers and activity is also picking up at Gas Natural Fenosa. Furthermore EDP considers a nationwide rollout in Portugal that can be coordinated with the mandatory deployment by its distribution network subsidiary in Spain. Berg Insight forecasts that annual shipments of smart electricity meters in Iberia will peak at around 5 million units per year during 2016–2017 before the market gradually slows down in the final years before the installation deadline in 2018.

France and the UK became active markets in 2010 as ERDF and British Gas entered the initial phases of their smart meter installation programmes. ERDF plans to start with a massive nationwide rollout from 2012 and will need to deploy around 6 million units per year between 2014 and 2017 in order to fulfil the regulatory obligations that will take effect in 2018. The UK is currently in a build-up phase, preparing for a mass rollout to nearly 30 million customers during 2014–2019. British Gas and E.ON have committed to the installation of at least one million smart electricity meters each before the mass rollout begins. Berg Insight expects that all major energy suppliers in the UK will switch to smart meters for new connections and planned replacements prior to the mass rollout. Ireland plans a nationwide rollout of smart meters starting in 2014.

This report answers the following questions:

- How are EU and national energy policies driving the adoption of smart metering?

- What are the UK government's plans for a nationwide rollout of smart meters?

- How are smart meter deployments proceeding in France and Spain?

- What are the latest regulatory developments in the Netherlands and Norway?

- What are the prospects for massive smart meter installations in Central Eastern Europe?

- Which lessons can be learnt from customer behaviour trials?

- Who are the leading suppliers of smart metering solutions for the European market?

- Which are the main providers of PLC and wireless communication technology for smart meters?

- What will be the impact of pan-European standard initiatives related to smart metering?

Installed base of electricity smart meters (EU23+2 2010–2016)

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