2016 Top Markets Report Smart Grid Country Case Study

United Kingdom

The British Government’s commitment to a nationwide smart meter roll-out by 2020 is a key driver for its Smart Grid ICT Top Markets ranking of third. Additionally, the regulatory framework in the U.K. is well developed to fund smart grid deployments, and a highly competitive market for retail electricity and consumer energy efficiency services exists. With the implementation of electricity market reforms underway, there is now the potential for the U.K. to develop a robust market for demand response and further opportunities for smart grid solutions at the distribution and consumer levels.

Market Overview

Since the mid-80s, the U.K. has been a global trendsetter when it comes to competition and innovation in electricity markets. For the better part of two decades, competition drove down electricity prices and helped to ensure robust energy supplies. Prices, however, have been on the rise for the last ten years. Government pressure on industry to contain costs and improve consumer services has culminated in the launch of a review of the domestic energy market by the U.K. regulator, with results being delayed but expected to be released in mid-2016.

The U.K. electricity sector is dominated by the “Big Six” energy companies – E.ON, RWE npower, Centrica, Scottish and Southern Energy, Scottish Power, and EDF Energy – that generate two thirds of the energy and control 95 percent of the retail market. Electricity prices in the U.K. are solely market-based and remain below those of EU peers, such as Germany and Spain, after taxes. Transmission is unbundled in the U.K., where maintenance, ownership and operations of the high voltage system falls to National Grid in England and Wales, SP Transmission in the South of Scotland, and Scottish Hydro-electric transmission in the North of Scotland.

The U.K. is becoming increasingly concerned over energy security, as existing generation capacity depletes, electricity imports rise, and energy sector investments slow amid political and regulatory uncertainty. The U.K. Government is faced with the challenge of facilitating investment in the electricity sector and achieving carbon reduction goals, all the while containing the rising consumer electricity prices that have become a hot-button political issue. ITA assesses that, as is the case with other European countries, interconnections will play an increasingly more significant role in the near-term.
Overview of ITA’s Analysis: UNITED KINGDOM

Strengths
- Existing regulatory framework facilitates strong funding and returns for smart grid
- Government roadmap in place, and commitment and support remain strong
- U.S. exporters have already proved highly competitive in U.K. electricity sector

Key Trends
- Smart meter procurements have begun, and major roll-out to begin in 2016.
- Electricity market reforms could drive demand response and energy efficiency opportunities

Risks
- Politics continue to threaten policy and investment in broader energy sector
- Potential under-achievement of capacity markets and renewable resources development.
- Consumer smart grid adoption and energy efficiency programs could under-perform

The U.K. Energy Bill, including the Electricity Market Reform (EMR) bill, passed into law in December 2013 and represents the government’s flagship response to electricity sector challenges. Britain’s electricity market now enters a transitional phase with the potential for major commercial opportunities for energy efficiency, smart grid, and various electricity service providers.

Policy and Regulatory Environment

After more than a year of compromises and revisions from its first reading in November 2012, the U.K. Energy Bill was signed into law in August 2014 and followed by a series of legislative changes focused on improving the implementation. The key objectives affecting the electricity sector include:
- Implementation of EMR to attract GBP 110 billion investment in generation and grid upgrades by 2020;
- Safety and security regulations for the nuclear sector to be implemented by the Office for Nuclear Regulation;
- Consumer protections, including limits on energy tariffs, improved transparency of electricity bills, and expansion of third-party consumer electricity services; and
- Increased coordination and strategic alignment between the electricity regulator, the Office of Gas and Electricity Markets (Ofgem), and the U.K. Government, including the Department of Energy & Climate Change (DECC).

Existing regulations in the U.K. already provide healthy support for the smart grid and energy efficiency markets, compared to other European nations. The DECC has set a deployment goal for smart meters at more than 50 million devices (30 million for electric), with regulated roll-out from 2016 moving toward 80 percent of homes having a smart meter by 2020.

Ofgem regulations enable utilities to include smart meters, renewable integration, and consumer energy efficiency program costs in electric bills. Ofgem’s new performance-based RIO framework (Revenue = Incentives + Innovation + Outputs) will involve setting eight-year price controls, offering incentives to encourage the growth of smart grids.

Taken at face value, the objectives of the Energy Bill should help drive further opportunities for these technologies and services. For example, the government has stated its intent to nearly triple the funding available for low-carbon sources of power, but during 2015, the outlook for additional deployment of onshore wind and solar has diminished as subsidies were cut and regulatory uncertainty increases.

New provisions for capacity markets in the U.K. are intended to facilitate the development of demand response programs and may stimulate increased investment in interconnections as regional neighbors with excess capacity seek to bid into the U.K. system.

The government’s push for improved billing and energy efficiency services to consumers should open doors for various solutions providers.

In September 2013, DECC established through contract the smart metering Data Communications Company (DCC), an independent entity, which will be responsible for linking all smart electricity and gas meters in homes and small businesses with the
systems of energy suppliers, network operators and energy service companies. The DCC is expected to be up and running in 2016. The government has created the Central Delivery Body, which contracts with media companies, consultants and electricity sector experts to support the “brand identity” of the smart metering program and ensure consumer engagement during smart grid roll-out and operations.

DECC and Ofgem created the public-private Smart Grid Forum to develop a roadmap and vision for the nation’s smart grid. The U.K. smart grid program is the most well-publicized and transparent project of its kind in any market. A wealth of information is available through DECC’s Website, and the annual reports on the Smart Metering Implementation Programme are highly informative.

In March 2016 the National Infrastructure Commission has published its report on balancing energy demand and supply. The key finding was that the U.K. smart power system should be achieved through three innovations: interconnection, storage and demand flexibility. The recommendations of the reports have been accepted within the HMG 2016 Budget.

Top Markets Analysis

The recent follow-through on government commitments to deploy smart grid technologies in the U.K. supports the market’s ranking for near-term smart grid ICT export opportunities.

U.S. manufacturers have already garnered success in the United Kingdom. In October 2012, U.S. Commercial Service representatives held a Smart Grid Trade Mission in the U.K. that resulted in over $40 million in export success for U.S. companies.

U.S. T&D equipment exports to the United Kingdom have grown at a 15 percent CAGR over the last five years to $66 million in revenues in 2015. This makes it the fourth biggest global market for U.S. manufacturers in the sector.

Opportunities and Challenges for U.S. Companies

Despite a delay to the national smart meter roll-out and lingering uncertainties over the implementation of the EMR, the U.K. smart grid market continues to develop and provide opportunities for U.S. exporters. The U.K. DECC’s assessment of future challenges to the electricity market cites the near-term need for “balancing technologies”, including:

- demand-side response (DSR) platforms and programs;
- electricity storage systems;
- network interconnections for increased access to bulk supplies across international borders and distributed generation at the local level;
- distribution automation technologies; and
- consumer engagement and energy efficiency programs to support the development of DSR and achieve customer-oriented objectives of the Energy Bill.

It is also important to note that meeting electricity supply challenges in the U.K. will likely create opportunities for vendors in the more traditional T&D equipment segments as well. Ofgem estimates that the U.K. will need approximately $200 billion of investment in new infrastructure, such as new transformers and cabling, by 2020. Additionally, DECC’s Community Energy Strategy, which foresees an additional 1 million homes with distributed energy by 2020, could be a driver of future opportunities for microgrid equipment and services.

There are also a number of risk factors that could limit the great potential of the U.K. smart grid market and U.S. exporter opportunities. Implementation of the Energy Bill has already been highly politicized, and electricity market reforms could under-achieve as a result. Additionally, many stakeholders – including consumer groups – are skeptical of the value of smart grid technologies and have raised privacy and cyber security concerns. The need to solve these issues in the United Kingdom may, in fact, create more opportunities for smart grid firms, but U.S. exporters will face top vendors from across Europe in one of the world’s most promising and competitive electricity services markets.

Know Your Buyer

United Kingdom purchasers of U.S. smart grid goods and services include generation, transmission, and distribution companies. This includes transmission networks operators such as National Grid, Scottish Power Transmission, Scottish Hydro Electric
Transmission and Northern Ireland Electricity, as well as distribution networks operators such as Electricity North West, Northern Ireland Electricity, Northern PowerGrid, SP Energy Networks, SSE Power Distribution, U.K. Power Networks and Western Power Distribution.

Summary of Resources

- U.K. Office of Gas and Electricity Markets: https://www.ofgem.gov.uk/
- Data Communications Company: https://www.smartdcc.co.uk/

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