EXECUTIVE SUMMARY:
Satellite Communications for Smart Grid Applications
VSAT and BGAN Satellite Technologies for Substation Automation, Distribution Automation, and Advanced Metering Infrastructure Backhaul

NOTE: This document is a free excerpt of a larger report. If you are interested in purchasing the full report, please contact Pike Research at sales@pikeresearch.com.

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Section 1
EXECUTIVE SUMMARY

1.1 The State of the Smart Grid

Following several years of widespread and surprisingly well-coordinated efforts of governments, standards bodies, and private industry worldwide, federal funding and pilot projects in the United States and abroad, as well as somewhat frenzied attempts to deploy smart meters to households globally, the early hype of the smart grid phenomenon is maturing. The fiscal and operational realities of the smart grid are becoming better understood as these pilot projects unfold and, as a result, priorities for smart grid participants are shifting subtly.

Today, facing a consumer backlash against perceived health and privacy concerns connected with smart meters (particularly in the United States), not to mention an undeveloped ecosystem for fully leveraging the data generated by smart meters, utility executives are increasingly examining the potential benefits of smart grid technology within the architecture of the grid and the business of providing electricity, and asking how smart grid technology can help bring more dollars to the bottom line. Applications like substation automation (SA), distribution automation (DA), advanced metering infrastructure (AMI) backhaul, network redundancy, remote monitoring, and mobile workforce applications are all gaining increased attention from utility managers looking to wring more costs out of their business models.

As with all smart grid applications, the communications network employed to convey data depends on a variety of factors, including the cost and availability of fiber, public wireless, and a multitude of other private wired and wireless options. But where alternative communications options are generally more practical and cost-effective for home area network (HAN) and neighborhood area network (NAN) smart grid applications, in the above noted situations, satellite communications is increasingly becoming a viable and, at times, the only alternative.

1.2 The Scope of this Report

In this report, Pike Research has drilled down into the details of where and when satellite communications provides a viable (at times, the most attractive) solution for smart grid communications. Notably, in order to bring smart grid functionality and all of its benefits to sparsely populated geographies, satellite communications rises to the forefront as a solution. Additionally, as a non-terrestrial-based network, satellite communications may be the only solution to keep the grid connected and/or bring it back online rapidly in cases of natural (or manmade) disasters. These are appropriate and important uses of satellite communications in the smart grid today; looking ahead, as satellite technology advances and emerging markets bring electric service to previously un-served areas, satellite appears to be well-positioned to play a growing role. In fact, while satellite will undoubtedly remain a relatively small element of the overall smart grid picture worldwide, Pike Research estimates that the global revenue generated by both equipment and services will amount to a total of nearly $2.1 billion cumulatively between 2012 and 2020.
By 2020, annual shipments of satellite-based smart grid nodes will amount to nearly 50,000 units and will generate equipment revenue of nearly $100 million, up from an estimated $30.6 million in 2012. Regionally, North America and Asia Pacific are expected to show the largest unit volume and revenue from sales of satellite-based smart grid equipment through 2020; over the longer term, Pike Research believes that emerging markets in Latin America, Eastern Europe, and the Middle East and Africa will provide further growth for satellite communications in smart grid applications.

The use of satellite communications in the smart grid is forecast to fall into three principal wide area networking (WAN) applications: connectivity of transmission and distribution substations (SA-WAN), networking of intelligent devices used for automation of the power distribution network (DA-WAN), and backhaul communications for advanced metering infrastructure concentration points (AMI-WAN). Of these, Pike Research sees the growth of distribution automation node deployments as the largest global opportunity.
Chart 1.2  Satellite-based Smart Grid Unit Shipments by Application, World Markets: 2011-2020

Chart 1.3  Satellite-based Smart Grid Device Revenue by Region, World Markets: 2011-2020

(Source: Pike Research)
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SCOPE OF STUDY

Pike Research has prepared this report to provide participants in the smart grid markets, including vendors (grid equipment, meters, communications equipment, in-home consumer devices, and IT hardware and software), telecommunications service providers, component suppliers, electrical utilities (power generators, retailers, and distributors), regulators, investors, and other interested organizations with a study of the market for smart grid satellite communications equipment and technology. The primary objective is to identify and evaluate the challenges and opportunities for satellite communications technology, given emerging smart grid application requirements and standards. This includes a forecast of likely growth for a range of satellite communications device types and technologies. This report also provides a review of major demand drivers, technical developments and standards, and selected key industry players within the competitive landscape. While technical overviews are provided, this is not meant as an exhaustive technical assessment of the technologies and markets covered, but rather a strategic examination from an overall business perspective. Pike Research strives to identify and examine new market segments to aid readers in the development of their business models. All major global regions are included. The forecast period extends through 2020.

SOURCES AND METHODOLOGY

Pike Research’s industry analysts utilize a variety of research sources in preparing Research Reports. The key component of Pike Research’s analysis is primary research gained from phone and in-person interviews with industry leaders including executives, engineers, and marketing professionals. Analysts are diligent in ensuring that they speak with representatives from every part of the value chain, including but not limited to technology companies, utilities and other service providers, industry associations, government agencies, and the investment community.

Additional analysis includes secondary research conducted by Pike Research’s analysts and the firm’s staff of research assistants. Where applicable, all secondary research sources are appropriately cited within this report.

These primary and secondary research sources, combined with the analyst’s industry expertise, are synthesized into the qualitative and quantitative analysis presented in Pike Research’s reports. Great care is taken in making sure that all analysis is well-supported by facts, but where the facts are unknown and assumptions must be made, analysts document their assumptions and are prepared to explain their methodology, both within the body of a report and in direct conversations with clients.

Pike Research is an independent market research firm whose goal is to present an objective, unbiased view of market opportunities within its coverage areas. The firm is not beholden to any special interests and is thus able to offer clear, actionable advice to help clients succeed in the industry, unfettered by technology hype, political agendas, or emotional factors that are inherent in cleantech markets.
NOTES

CAGR refers to compound average annual growth rate, using the formula:

\[
CAGR = \left( \frac{\text{End Year Value}}{\text{Start Year Value}} \right)^{\frac{1}{\text{steps}}} - 1.
\]

CAGRs presented in the tables are for the entire timeframe in the title. Where data for fewer years are given, the CAGR is for the range presented. Where relevant, CAGRs for shorter timeframes may be given as well.

Figures are based on the best estimates available at the time of calculation. Annual revenues, shipments, and sales are based on end-of-year figures unless otherwise noted. All values are expressed in year 2012 U.S. dollars unless otherwise noted. Percentages may not add up to 100 due to rounding.