

Global Study of Data Communications Usage Patterns and Plans in the Electric Power Industry: 2011-2015

Volume 3: Market Outlook

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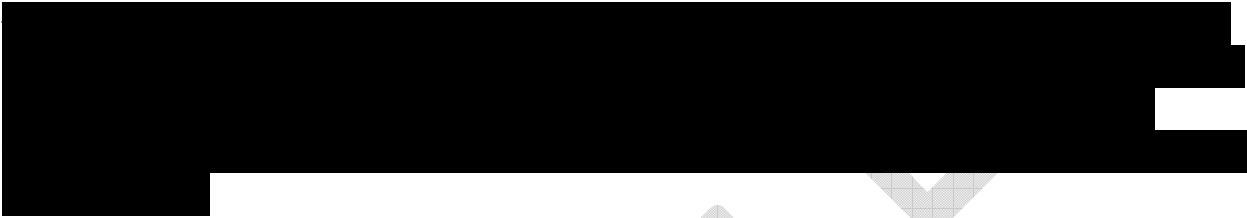
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Over the past three decades, Newton-Evans Research has studied a variety of control systems and related technology used by the world's electric power industry, and to a lesser extent, the use of similar control systems in other energy segments.

Collectively, these scores of studies have all corroborated a not-surprising finding, that



Our survey findings from recent studies on all aspects of smart grid have largely formed our views of the real world of data communications as it is and as it will likely take shape over the near-term and mid-term. However, many financial, technical, institutional and operational challenges continue to confront telecomm engineers.

While communications technology advances are taking place rapidly, there is a significant lag between availability and adoption by the world's electric power community due to a number of factors. Chief among these is the need to keep the lights on (or the oil, gas and water flowing) while trying to upgrade communications infrastructure.

In today's utility environment, there is likely to be



There is likely also to be some mix of wireline and wireless communications activities for at least some portion of distribution network automation activities. There is a gap between these utility-field asset networks, and the outlying coverage to enable seamless meter data acquisition. The issue is whether to combine communications approaches or to keep true operational data isolated from all external (customer-related) communications channels.

In addition to our own studies, our findings have been based in part on the new studies released by the U.S. Department of Energy, by the National Institute of Standards and Technology, the Electric Power Research Institute and similar international organizations. Additional insights gleaned from reading excerpts of studies from Greentech Media Research, Scott-Madden, KEMA Consulting and Power System Engineering have proven useful. Discussions with communications and control systems vendors, analysts and

consultants serving the electric power industry have been extremely valuable. Articles published in the Utilities Telecom Council's UTC Journal and participation in UTC conferences have provided outstanding information for our ongoing education for many years.

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Table 10 presents estimates of teleprotection expenditures for selected regional markets. The estimates are based on 2011 data.

Table 10: *Teleprotection Market Sizing Estimate*

Teleprotection Market for Comms Topics Units/Dollars	North America	Western Europe	Australia and New Zealand
Communications Networking Equipment	██████████	██████████	██████████
SONET-based Teleprotection Equipment	██████████	██████████	██████████
Security Devices and Software for Teleprotection	██████████	██████████	██████████
Ongoing Maintenance and Support	██████████	██████████	██████████

Global Outlook for Synchrophasor-Related Network Expenditures

In Table 11, Newton-Evans Research has smoothed the expected payout of funding for the few major proposed North American synchrophasor initiatives (WECC, Eastern Interconnection-TVA, MISO, possibly ERCOT, and one or two similar broad-scoped efforts in Europe likely to get approval for development in the 2012 and later periods) to reflect annual expenditures over 2-4 years, rather than total contract values in one year.

Possible total value of proposed synchrophasor projects currently stands at about [REDACTED] in North America and somewhat less in Europe. In the 2010 and 2011 Newton-Evans reports on Smart Grid initiatives, the research program uncovered a total of [REDACTED]. The total expected costs of these initiatives stands at about [REDACTED]. The projects are to be underway and completed within a two-to-five year period over the forecast years. The findings indicate [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Table 11: Synchrophasor Network Expenditures Global Outlook

Synchrophasor Segment Category	2010	2011	2012	2013	2014	2015
PMU Units/Dollars; Ave unit price of \$10,000-\$35,000						
PDC Units/Dollars Ave unit price of \$12,500-\$40,000						
Phasor Data Gateways; Ave unit price of \$14,500-\$50,000						
Data Comms NW Equipment: Switch/Router						
Synchrophasor Device and Network Management Solutions; Mostly in-house developments w Consultant Assist						
Phasor Applications (hardware and software Development/Package Costs)						