Newton-Evans Research Company's

Market Trends Digest

September 2013

Newton-Evans research company

www.newton-evans.com

Newton-Evans Third Quarter 2013 Research Efforts and Topics

Client-based Studies

Medium Voltage and High Voltage Circuit Breakers

Newton-Evans continues to gather data on purchase plans for medium voltage and high voltage circuit breakers among major U.S. investor owned utilities and large G&T cooperatives. There are some key changes in technology affecting the next generation of circuit breaker design.

In-house Studies

Study of CAPEX and O&M Budgets

In July, Newton-Evans released this 126 page report, "Global CAPEX and O&M Expenditure Outlook for Electric Power T&D Investments: 2013-2014; Funding Outlook for Smart Grid Development Based on summer 2013 Survey Results." The new mid-2013 edition includes information about market trends and market size estimates for major smart grid building blocks, including transmission and distribution network control systems, protection and control systems, substation automation and integration, distribution automation and advanced metering infrastructure. This year's study also includes budget trending information for transmission and distribution grid modernization infrastructure. New in this year's study are the budget trends for cybersecurity at the operational level and for the entire utility enterprise.

Global CAPEX and O&M Expenditure Outlook for Electric Power T&D Investments: 2013-2014 Funding Outlook for Smart Grid Development is the fifth report in the Newton-Evans' Research Company's smart grid investment tracking series, begun in late 2008. To purchase this study for only $495.00, visit our website:
www.newton-evans.com/reports/#CAPEX2013

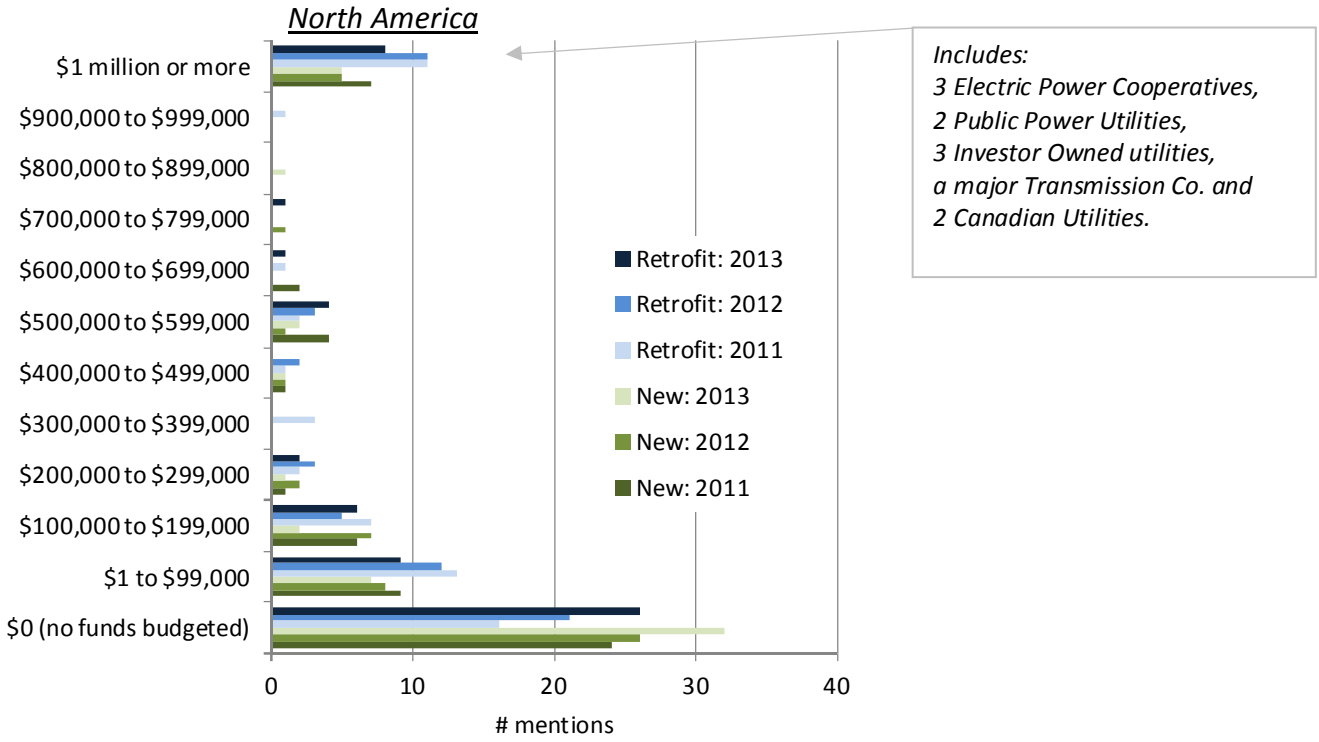
Substation Automation & Integration: 2014-2016

This survey-based report series is currently in the planning stages. Newton-Evans is currently requesting suggested topics for inclusion in the survey questionnaire from early subscribers to this series. For examples of previous Substation Automation studies, see our reports page or go to the following URL for samples from the past study:
www.newton-evans.com/SSA2011_Samples.zip

Substation Automation & Integration 2014

Newton Evans Research Company is preparing to update its biennial study of *The World Market for Substation Automation and Integration Programs in Electric Utilities.* This new 4-volume report series will cover the years 2014-2017, and will also include historical findings from several past editions. Following are some of the key findings from the year-end 2011 study. The substation modernization expenditure-related topics will be updated when field work is underway during the 4th quarter of 2013. The 2011 study sampled roughly 20% of electric utilities worldwide by number of end use customers. We hope to exceed that percentage in this new round of research.

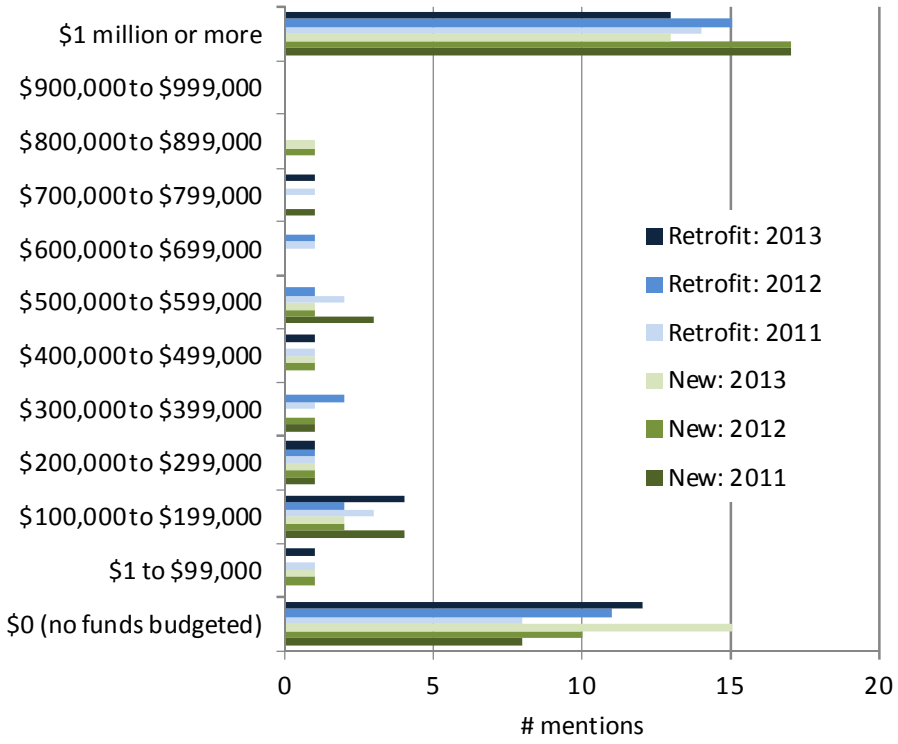
How much is your utility likely to spend on new and retrofit substation automation and integration programs between 2011 and 2013?



A frequency distribution shows that most of the respondents in the sample did not have funds budgeted for one or more years in both categories (retrofit and new). About twenty utilities were spending less than $100,000 in one or more years, and eleven utilities planned to spend over $1 million. A handful of respondents planned to spend between $500,000 and $600,000.

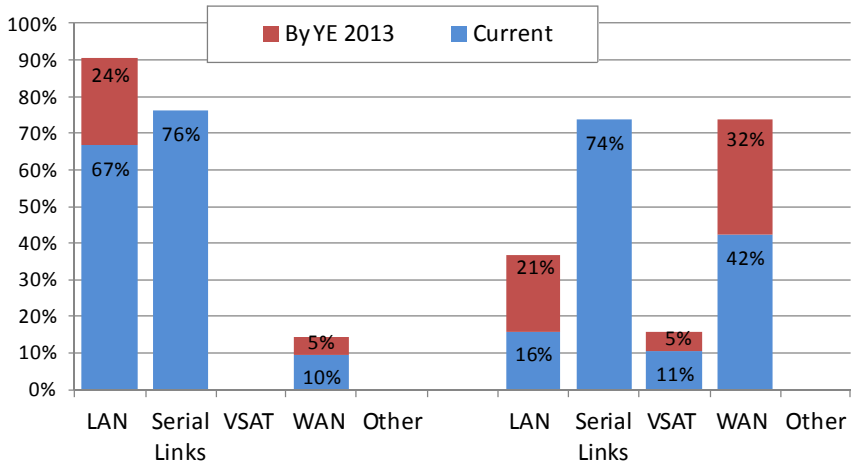
How much is your utility likely to spend on new and retrofit substation automation and integration programs between 2011 and 2013?

International



The international sample of utilities outside the U.S. and Canada had a larger proportion of respondents spending over $1 million; however, the international utilities in the sample tend to individually represent much larger, less deregulated infrastructures than U.S. utilities. The sample of international utilities spent an average of $6.5 million per year on new substation automation and integration activities with a median of $1.4 million.

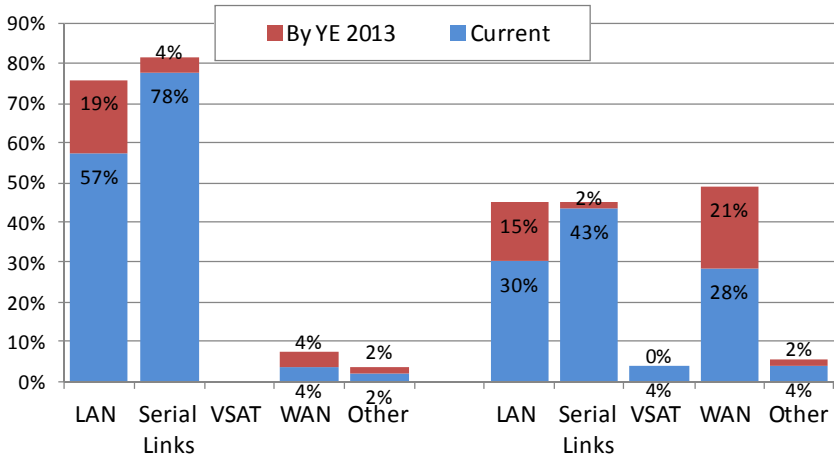
Choices of Communications Architectures: North America



Within Substation *To Substation*

Seventy-six percent of the utilities sampled in 2011 used Serial Links to communicate within the substation and 67% percent used a local area network (LAN). However, another 24% indicated plans to use a LAN for inter-substation communications.

Choices of Communications Architectures: International



Within Substation *To Substation*

Despite Serial Links being the most favored communication method, almost one-fifth of the sample said they planned to use a LAN by 2013. This is similar to what North American utilities had reported.

Early subscribers have an opportunity to provide suggestions for inclusion in the field survey, and to receive interim progress reports during the course of the study (October through January, 2014). Please contact us if you would like to take advantage of an early subscription to this four volume series. By doing so, you will have an opportunity to influence the study design.

The World Market for Substation Automation and Integration Programs in Electric Utilities is one of three Newton-Evans flagship study topics, first undertaken in 1989 and now in its 11th edition. Please email cnewton@newton-evans.com or eleivo@newton-evans.com or give us a call at 410 465 7316 to pre-order and prepay your subscription by September 30.

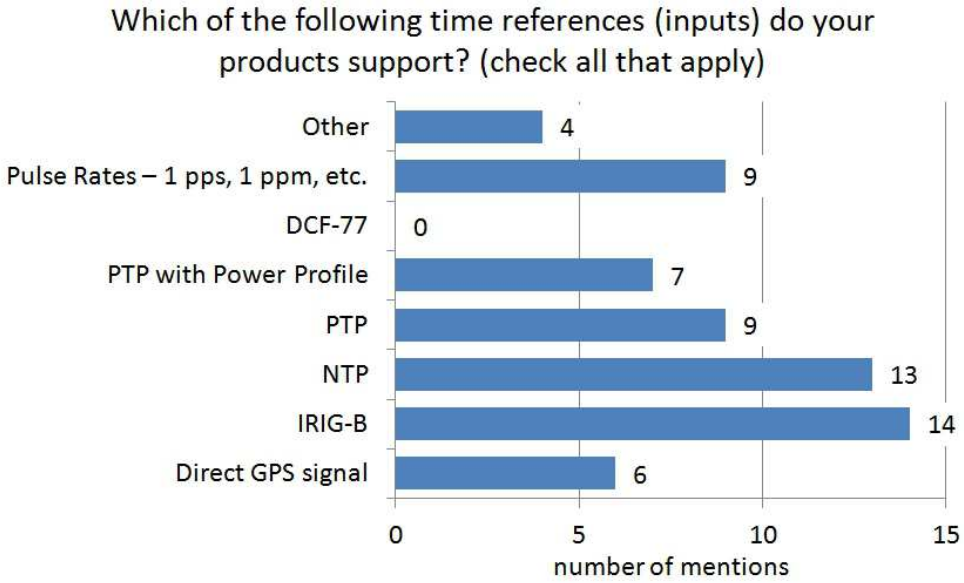
The World Market for Time Synchronization in Electric Power Substations

During the second quarter of 2013, Newton-Evans Research Company undertook a two-pronged research program to determine the current usage patterns and mid-term plans among electric utilities for implementing time synchronization, the use of various time reference standards and the role of GPS. Concurrently, manufacturers of substation devices were queried about the extent to which their products and equipment supported precision timing protocol (PTP) and a variety of related time synchronization protocols.

By early August, Newton-Evans had received usable survey responses from 17 manufacturing company participants, 57 utilities from nearly 30 countries, and substation engineering teams from six major transmission and distribution engineering consulting firms.

The report, *Assessment and Overview of the World Market for Time Synchronization in Electric Power Substations: A Utility and Industry Survey-Based Report on Precision Timing Requirements,* is organized in three sections. The first section summarizes the survey findings from 17 leading suppliers of substation automation-related intelligent devices. The second section is a summary of findings from a survey of utilities and consultants around the world regarding their approaches and plans for time synchronization in their electric power substations. The third section is our synopsis of the current and mid-term outlook for this market, the vertical industry focus and global sales regions for the identified suppliers of precision timing clocks (whether PTP IEEE 1588-compatible or not).

<u>Intelligent substation equipment manufacturer/integrator survey findings:</u>
Precision timing and time synchronization are topics vital to the future of smart grid operations, especially in electric power substations. In the recently published Newton-Evans, "Assessment and Overview of the World Market for Time Synchronization in Electric Power Substations," we asked 17 vendors what time references their substation IEDs support. Fourteen out of 17 said that their products support IRIG-B, and 13 indicated NTP (Network Timing Protocol). Precision Timing Protocol (PTP) and Pulse Rates are offered and supported by 9 of these manufacturers while PTP with Power Profile is supported by 7. Just over one-third (35%) reported using direct GPS signals, while nearly one-quarter (23.5%) of the group reported "other" time references were used or offered with their substation equipment.



The participating manufacturers represent the majority of substation-based intelligent electronic devices (other than protective relays) used in conjunction with substation modernization programs. A number of these respondents also manufacture synchrophasor products including phasor measurement units and phasor data concentrators. Among the other product classes represented are: metering products; communications switches; fault and event recorders; protective relays; automation processing platforms; equipment monitors, and a range of IEC 61850 and DNP 3 supported equipment and devices.

Utility and Consultant Survey Observations

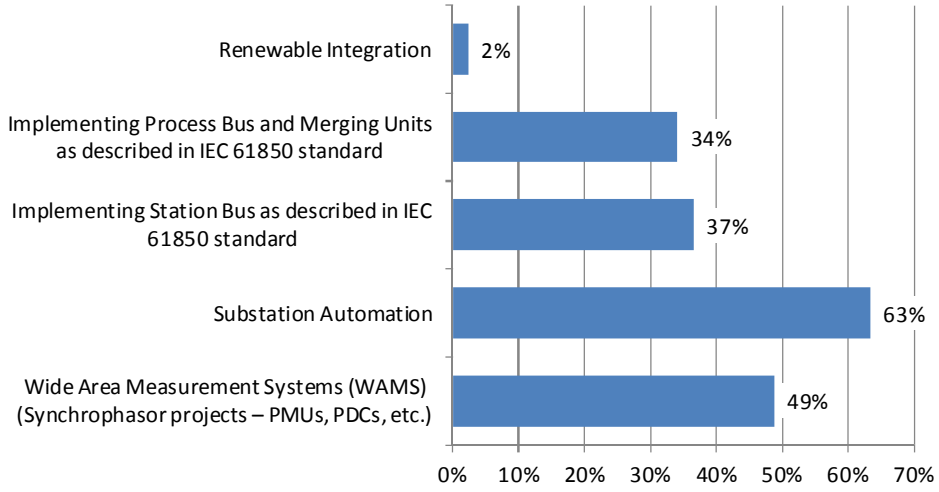
There was strong support for this time synchronization study received from 57 utilities in 24 countries. In addition to the utilities, six leading international engineering consulting firms provided key members of their substation consulting teams to participate in the study. The survey included 14 questions related to substation timing issues and current approaches to synchronize and distribute timing information.

If PTP implementation is done on a project basis, for which projects would you specify PTP?

The findings here place substation automation as the most frequently cited project type for PTP implementation, with 63% of all respondents listing this activity. WAMS was next (49%), with implementation of station bus as described in the IEC 61850 standard (37%). Also related to 61850 was the choice of implementing process bus and merging units (34%). Note that the two IEC 61850-related project types were primarily the choices of international utilities,

with less selection by North American respondents. Only one respondent indicated renewable integration as a project for which it would specify PTP.

If PTP implementation is done on a project basis, for which projects would you specify PTP?



The full 64-page report is available on our website for $975.00
www.newton-evans.com/reports/#timesynch

Knowledge 2013 Summit: Nov. 4-6

Charles Newton, President of Newton-Evans Research Company, Inc. is serving as the Operations Chairperson at the upcoming Knowledge 2013 Summit, Nov 4-6 2013 being held at The Broadmoor, Colorado Springs, Colorado.

Sponsored by Energy Central, the following conference information has been excerpted from their website at www.knowledgesummits.com

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Designed to create community and stimulate dialogue, Knowledge2013 Utility Executive Summit gathers senior leaders in Customer Service, Operations, and Information Technology from top investor-owned, municipally owned and cooperatively owned utilities for two days of interaction and collaboration addressing the pressing topics most important to utility executives.

Topics selected for this year's conference by members of the Operations Committee include:

- *The New Distribution Toolbox: The Movement Towards Integrated DMS/DA/OMS/SCADA Operations*
- *Situational Awareness: Operational Tools for Future Operations*
- *Cyber Security: Securing the Grid in a Dangerous World*
- *The New Dynamics of Rate Structures: Regulatory Impact, New Metering, and Cost*
- *Recovery Operations*
- *Renewables Integration: It's Not Coming, It's Already Here*
- *Convergence of OT/IT – Ownership & Operationalization*

Operations Committee Members

Reza Alaghehband, Senior Operations Consultant, Austin Energy
Stephen Cooper, Director of Electric Systems Asset Management, JEA
Lee S. Krevat, Director, Smart Grid, San Diego Gas & Electric
Michael Lamb, Operations Chief of Staff, Xcel Energy
Paul Lau, Assistant General Manager of Power Supply & Grid Operations, SMUD
Cal Morris, Director of Engineering, Clark Public Utilities
Charles Newton, President, Newton-Evans Research Company (Chair)
Thomas Pierpoint , Group Mgr of Enterprise Applications, Pepco Holdings, Inc.
John Romero, GM, Acquisition, Eng. and Planning, Colorado Springs Utilities
Joseph D. Thomas, VP, Client Fulfillment & Electric System Ops., United Illuminating Co.

KNOWLEDGE 2013: Significant content. Celebrated format.
Since content is determined by a pre-selected committee of your peers, session themes are not only relevant and timely to your everyday challenges as a utility executive, but enhanced with insights from the movers and shakers in electric power—all to provoke discussions that matter. Best of all, Knowledge2013 Utility Executive Summit provides a balance of high level keynote speakers, interactive roundtable discussions, informal networking, and relaxed activities to help you build relationships with your colleagues within your organization and across the nation.

Attendance is limited to 100 qualified executive-level participants, so registration is recommended now to reserve your place.

Newton Evans In The News

Here is a sample of news coverage of some of the company's recent studies along with links to the full articles:

Test Monitor and Control Online: August 6, 2013
Report on Substations and Time Synchronization
http://tdworld.com/test-monitor-amp-control/report-substations-and-time-synchronization

Energy Central Professional: July 30, 2013: *Utility CAPEX/OPEX Report Published with Results of April-July 2013 Newton-Evans Study of Electric Power T&D Investment*
http://pro.energycentral.com/professional/news/power/news_article.cfm

Energy Central Professional: July 29, 2013
Three New Grid Modernization Market Studies Published by Newton-Evans Research Company
http://pro.energycentral.com/professional/news/power/news_article.cfm

Intelligent Utility Update, July 17, 2013
Letters from the Knowledge Summit: Chuck Newton and Operational Changes
http://www.intelligentutility.com/article/13/07/letters-knowledge-summit-chuck-newton-and-operational-changes

Smart Grid News May 15, 2013
Smart grid capital spending up, but operations and maintenance budgets threatened
http://www.smartgridnews.com/artman/publish/Business_Markets_Pricing/Smart-grid-capital-spending-up-but-operations-and-maintenance-budgets-threatened-5760.html

T&D WORLD ENERGIZING, May 15, 2013
43% of Utilities Plan to Increase Capital Expenditures for 2013 on EMS/SCADA/OMS
http://tdworld.com/energizing/study-43-utilities-plan-increase-capital-expenditures-2013-emsscadaoms

UTILITY HORIZONS, April (1QTR 2013 Edition)
Usage Patterns and Trends in Electric Utility Automation Pages 60-63
http://www.nxtb, 2013ook.com/nxtbooks/utilityhorizons/2013q1/#/60

Transmission and Distribution World, April 2013
Global Utility Telecommunications Special Supplement section, page 10
http://tdworld.com/smart-grid/global-utility-telecommunications

Chuck's Viewpoints and Insights on a Variety of Current Newton-Evans Research Topics

By Chuck Newton & Staff

Now that autumn is about here, upcoming conference participation kicks off in high gear in September. These conferences provide additional opportunities for our team to stay abreast of the issues surrounding grid modernization and the solutions being offered and put to work by utilities around the country and throughout the world.

First, distribution engineering activities will be discussed and workshops held at the **Southeastern Distribution Apparatus School and Conference** (Auburn University, September 23-26). Chuck will be speaking on *"Trends and Outlook for Distribution Engineering and Operations"* on Monday afternoon. This regional conference is now taking on a more important look and feel with speakers this year coming from large investor-owned utilities as well as from municipal utilities and electrical cooperatives from throughout the South.

That same week Chuck will be in Austin to participate in the 2013 Annual Energy Management and Market Operation Systems (EMMOS) User Conference. Tuesday morning he will be speaking on *"Smart Grid – A Reality Check"* and participating in a panel discussion with several of the key executives involved in energy management and market management systems across the nation.

Then, in October, the number of conferences expands to the following; with still more planned for November and December *(see our website calendar page for a complete listing of upcoming conferences through 2014)*

IEEE PES ISGT-Europe 2013, 6-9 October 2013, Copenhagen, Denmark, http://www.ieee-isgt-2013.eu

IEEE Substations Committee Meeting-10, 2013, October 7-10, 2013, Nashville, Tennessee
http://ewh.ieee.org/cmte/substations/scm0/Nashville%20Fall%20Meeting/basefile.htm

TIA 2013 – *The Future of the Network* * October 8-10, Washington, D.C., http://www.tia2013.org

National Electrical Contractors Association Convention and Trade Show, October 13-15, 2013 Washington, D.C. http://www.necaconvention.org

World Energy Congress – 22nd Conference, 13-17 October 2013, EXCO Center Daegu, Korea http://www.worldenergy.org/events/world_energy_congress/

Grid of the Future Conference CIGRE and USNC-EPRI *, October 20-22, 2013, Boston, Massachusetts , http://www.cigre-usnc.tamu.edu/meetings/

Looking Ahead:

Our fourth quarter 2013 edition of Market Trends Digest will include early coverage of initial findings from the 2014-2016 substation modernization study focused on automation and integration topics.

In addition, sneak previews of the upcoming market overview series for 2013-2015 will be included in the next MTD.

Reviews of the autumn electric power conferences and previews of the upcoming 2014 conferences will be provided.

Additional excerpts from some of the late summer report topics and early autumn studies will be included in the next edition.

Previews of the 2014 Distributech Conference