Newton-Evans Research Company's

Market Trends Digest

for the Computer, Communications, and Controls Industries

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Celebrating our 25th Anniversary

Newton-Evans Research Company celebrates 25 years of providing marketing research and planning services on global electric power and energy markets for the computer, communications, control systems, and test and measurement equipment industries.

From the company's beginnings in 1978 as a one-man operation focused on computer industry research, Newton-Evans now serves as a leading international source for technical product marketing information on the global energy industry.

The staff and international affiliates of Newton-Evans Research Company look forward to continuing to provide quality research services and support on behalf of our clients and the world community of electric power utilities and energy companies.

Newton-Evans Research Observations on Electric Utility Capital Spending, O&M Budgets and the Outlook for 2003

Newton-Evans Research Company has researched various sources with regard to electric utility spending activities in general, more specifically for Transmission and Distribution, and within T&D, focused on the areas of: RTUs and substation automation and integration activities; T&D asset monitoring activities; and, T&D equipment test activities.

Newton-Evans Research Company Summary of U.S. and Canadian Government Information Releases Concerning the Electric Power Industry Ú

Government information typically lags by one or two years from the current time period. So it is with electric utility performance and spending information. However, some of the information points up the slowdown in recent period spending, as well as the cyclical nature of utility capital investments in new plant and equipment. Σ

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The electric power generation and delivery industries have been in a recession for at least 18 months due to decreasing use of energy among industrial/commercial customers across the country. This is in spite of hot weather this past summer, and a colder than usual winter to now, fueling increases in residential electricity use, but not enough to offset the lower usage levels in industry.

See Figure 1 for an illustration of just how much revenue erosion has occurred in sales of electricity to U.S. industry.

As a result of lower revenues and lower earnings, spending plans on a capital budget basis have been reduced in many major utilities.

O&M spending is being maintained at recent year levels, and in some cases is growing (in the range of 4 to 7 percent).

Electric utilities enjoyed a huge increase in capital spending from 1999's $41 billion to a level of $53 billion in 2000. The U.S. federal data for 2001 will not be available until the first quarter of 2003, as verified directly with the Department of Energy. Nonetheless, it appears that capital spending decreased or, at best, remained flat in 2001, certainly for distribution projects, and the capital spending outlook is for one of continuing caution for the current and upcoming fiscal years in many utilities.

The case is somewhat similar for O&M spending patterns. While these are not normally projected forward, a look at the last three complete years for which data is available shows essentially flat levels of spending for utility O&M activities. There are some exceptions among IOUs and rural coops where O&M spending increases of from three to six percent are occurring.

Federal and local utilities (public power utilities) actually showed an increase of 8.3 percent from 1999 to 2000 in O&M spending for transmission and distribution. Non-generator utilities showed less of an increase, and essentially O&M spending has not gone up appreciably (better than the rate of inflation) since 1995 among distribution specific utilities.

In the U.S. government's composite statement of income for major U.S. investor owned utilities 1995 to 1999, the range of O&M spending went up only slightly, from $111 billion in 1995 to about $120 billion by 1999. The range appears to remain at about the same level for 2000, 2001, and 2002 based on utility information collected and prepared for this report from IOUs as well as from the results of a recent equipment vendor survey conducted by Newton-Evans Research.

Newton-Evans Research Company Summary of U.S. Department of Commerce and Trade Association Information Releases Concerning Equipment Sales to the Electric Power Industry:

A review of industry performance in eight industries relying on, or supporting, electric utility infrastructure spending indicated slow growth, with export sales down, and a slow domestic order rate for equipment by utilities at mid year 2002. With a cheaper dollar, US exports should increase in 2003.

While some industry segments enjoyed relatively high growth rates from 1999 to 2000, including electricity measuring instruments (12.9%); energy cable and wire (11.8%); switchgear (8.1%) and power and distribution transformers (7. 6%), other support industry segments did not grow nearly so well. In spite of this overall seemingly good growth over the '99 through '00 period, keep in mind that that was the year in preparation for Y2K and utilities went on a buying binge for spares in many areas.

Other manufacturing industry segments geared somewhat to electrical utility purchases, such as engines, turbines and power transmission equipment (2.1%); electrical equipment manufacturing in general (0. 6%); relays and industrial controls (-0.1%) and sales of storage batteries (such as used in substations) stood at - 1.0%.

Importantly, the shipment values for exports and imports in almost all of these segments dropped in year 2001 when compared to 2000.

National Electrical Manufacturers Association (NEMA) indicated that in August 2002 all industrial production has dropped by nearly three percent ∨

Figure 1
Utility Sales to Industry

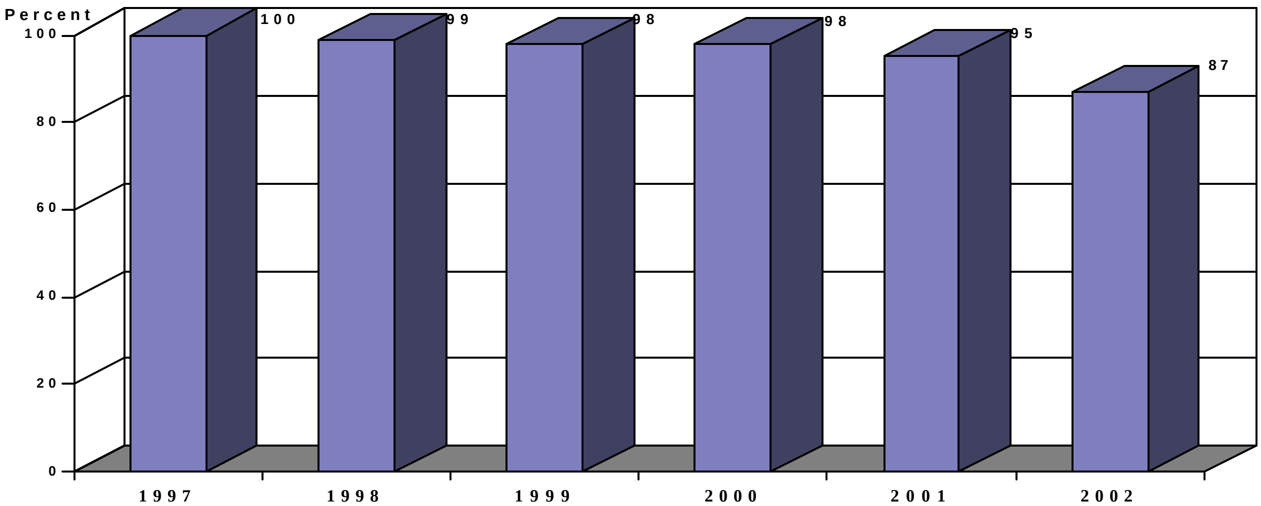

Chart Prepared by Newton-Evans Research Using Federal Reserve Data

from March 2001 to March 2002. More importantly, major electrical equipment production has fallen by 6.6 percent. Industrial manufacturing capacity utilization stood at 73% at the end of the first quarter of 2002. The same measure stood at nearly 74% by November, better than 2001, but six percent below its 1997-2001 average.

NEMA also reported (August 2002) that electrical equipment manufacturers have sliced payrolls by more than 16% over the past year. Electrical equipment manufacturers' value of shipments has dropped by nearly 13%, while manufacturers' inventories of electrical equipment has jumped nearly 10% from March 2001 to March 2002.

Department of Commerce data also shows a 10% reduction in the value of manufacturers' new orders for electrical equipment for the first six months of 2002 when compared to the same time in 2001.

Electric Utility Indicators of Capital andO&M Spending:

Newton-Evans Research has prepared a history and forecast of financial information taken from annual reports of 25 major investor owned utilities retained on file at the company. The findings from this exercise point up the observation that there was good growth in capital investment during the years 2000 and into 2001, with much of the funding committed to repowering of generation plants. However, the trend had turned decidedly negative for 2002 (down by 1.9%) and the forecast made by these utilities is for an additional decrease in capital spending budgets by another 12% for 2003. The mid term future looks brighter, based on the planned level of longer range capital spending moving up by 10% from 2003 to 2004.

These same utilities also reported historical expenses for Operations and Maintenance. Here, the trend for the year 2000 showed an increase of 4.2% and for the year 2001 the amount was up another 7.4% on average. Conversations with transmission and distribution officials in 2002 in two major studies (protection and control, and substation integration and automation) point up our earlier observation that O&M spending has flattened out for 2002.

Supplier Viewpoints on Electric Utility Spending:

Chuck Newton interviewed several industry executives in the September - October 2002 period concerning their outlooks for 2003 and beyond. Here is a summary of their observations.

The first reply from a major SCADA/RTU supplier indicated that RTU sales are at about the same level as last year, and that substation automation and integration (SA&I) business is increasing over last year by three to five percent. This source also believes that utility T&D capital spending is down *"…Northwest was very hard hit by the ripples of the California pricing disturbance and speculative decisions by many publicly owned utilities. The Southeast had a cool summer and warm winter, both of which are bad for utility cash flow."* T&D O&M budgets are running about the same as last year.

For the next twelve to 18 months, this company believes that RTU sales are likely to remain about the same level, while SA&I business increases by three to seven percent. The source continues that sales to the served electric utility market are likely to increase (no percentage indicated). In his opinion, three things are necessary to increase the level of T&D spending among North American utilities. These include: "*1) stabilization of the deregulatory environment; 2) a couple of good heating and cooling seasons for utilities (cold winters and hot summers); and, 3) drastic change of the cost of poor quality and/or reliability to tip the scale towards quicker payback of T&D investments.*"

A second reply came from another major player in the SCADA market. This executive indicated *"RTU sales increases of nearly 20% saved the day in light of poor systems sales (few opportunities)."* SA&I business is also growing, but only *"…as a result of a few good projects.*" This company believes spending is way down for both capital and O&M budgets in munis and cooperatives.

The marketing/sales manager at another SCADA/ RTU business indicated that RTU sales and SA&I businesses are running at about the same level as last year. He also believes both capital and O&M budgets are flat. This same official expects sales of RTUs to increase by 2 to 4 percent, with SA&I business remaining level. Overall, this company expects flat sales for the coming year or so.

This same source commented as follows: *"The traditional RTU market is certainly not in a growth mode; which, in part, is a result of market maturity, as well as IED proliferation. In addition, utilities are trying to squeeze more life out of their assets so as to defer capital spending. As such, they are more inclined to consider substitute product offerings, as opposed to traditional fork-lift replacements. A key example would be RTU retrofits, which is a means of reducing capital outlay significantly. In many cases this can be expensed from O&M budgets."*

"Naturally, the 64 thousand dollar question at this point is timing. I believe that the energy business must stabilize before we see increased spending, regardless of technology advances. My guess is that it is a couple of years off yet."

A reply from another T&D systems company indicated that RTU sales are up (25%), but SA&I business is down strongly (by 20%). This manager believes that T&D capital spending is down by 15% from 2001, while T&D O&M budgets are holding level. For the upcoming year or so, he expects RTU sales to be flat, with growth in SA&I business around 15% Overall, this firm is looking for increases of about 10% for 2003. Comments included this: "*A combination of 9/11, Enron, and a warm summer of 2001 seemed to impact 2002. We need more confidence in our economy and some assistance from the weatherman*."

Comments from a major provider of transmission equipment (transformers, switchgear, etc.): *"We've had the good fortune to win some large equipment procurements that had not been on the horizon at the beginning of 2002. Serendipity seems to help us quarter to quarter. At the end of the year, it is orders and backlogs that count, that's what keeps the accountants happy and off our backs. However, it makes the job of market and sales planning and factory loading much more difficult. Right now, 2003 looks very cloudy, just as did 2002!"*

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Secure Facilities - Most Important Security Measure to International Substation Respondents

During the fourth quarter 2002, Newton-Evans published Volume II (International Market) of its four volume study entitled "The World Market for Substation Automation and Integration Programs in Electric Utilities: 2002-2005." One of the more than 20 topics discussed in the report includes current and planned use of substation security measures.

Seven optional responses were listed in this question on substation security methods and practices. International utilities were asked to indicate current/planned use of: encryption of RTU communications, password protection for IEDs, video camera surveillance, improved intrusion detection, secure facilities, eye/fingerprint identification, and limited accessibility to substation-related keys.

The most important of these security measures in the international community included: secure facilities (81%) and limited accessibility to substations (70%) Nearly one-half of the respondents also mentioned password protection for IEDs, and improved intrusion detection.

Based on the geographic area of the respondents, divergent responses can be noted. European and Asian Pacific groups were more likely (over 90% mention rate) to be implementing secure facilities than their counterparts in Latin America and Mid-East/Africa (42% and 60%, respectively). Eighty percent of the Mid-East/Africa grouping indicated the current importance of password protection for IEDs, compared to about 40% of the other groups.

In the completed North American study (Volume I), the most commonly used measure today is the securing of facilities (locked buildings within a locked substation), as mentioned by 77% of the responding North American utility officials. Next in current practice importance was the "limited accessibility to substation keys" mentioned by 60%, followed by the use of password protection schemes for IEDs, stated by 59%. Three other measures received some mentions - encryption of RTU communications (16%), improved intrusion detection (15%), and video camera surveillance (14%).

Investor-owned utilities in the U.S. were more likely than other utility types profiled in this report (public power, rural electric cooperatives, and Canadian) to be making use of password protection, secure facilities and limited access to keys.

Figure 2 International
Current and Planned Usage of Substation Security Measures

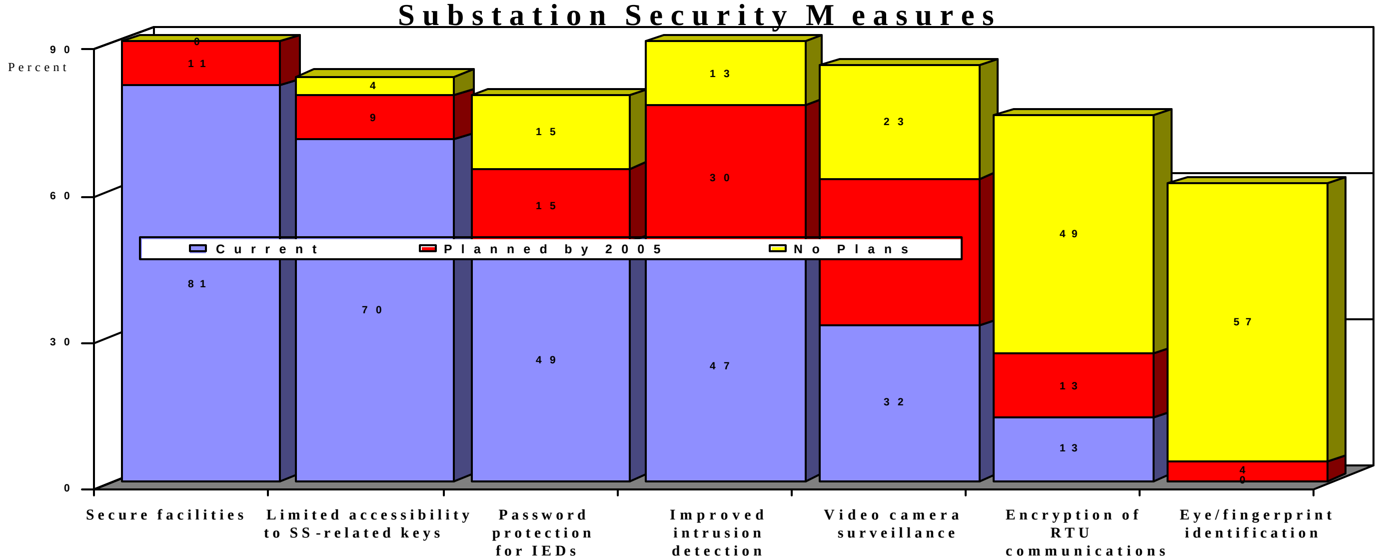
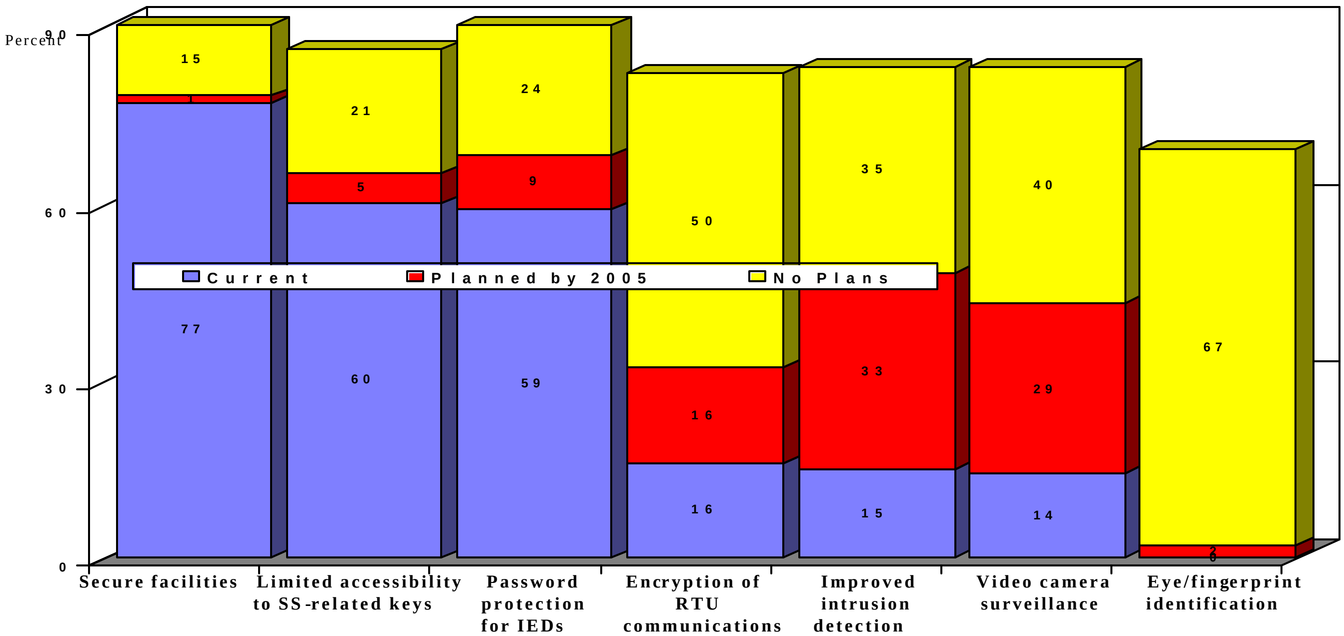


Figure 3 North America
Current and Planned Usage of Substation Security Measures



Plans internationally called for increasing the use of improved intrusion detection along with video camera surveillance (30% planning to adopt either or both measures). Nearly 60% of the responding Latin American utility officials noted plans to implement video camera surveillance.

Plans among the North American respondents called for increasing the use of improved intrusion detection (33% citing this) along with video camera surveillance (29% planning to do so). Eighteen utility officials also mentioned encryption. Only a few mentions were made for the other optional security measures. Improved intrusion detection was in the plans for more than 56% of the Canadian respondents, and both improved intrusion detection and video camera surveillance were indicated as plans by 43 % of the public power utilities.

Substation physical security issues are being addressed by CIGRE's workgroup B3-03.

Substation Report Information

The new year-end 2002 series measures current market sizes, and estimates and forecasts demand for SA&I equipment. In addition to profiling utility requirements and plans, the substation research program focused on defining the broader product and market requirements that suppliers must meet in order to successfully participate in the substation automation and integration programs with electric utilities worldwide.

Volume III of this series contains profiles of 56 substation equipment, intelligent electronic devices, and communications products and services suppliers.

Volume IV includes SA&I market forecast and assessment. The report is comprised of four sections, including estimating/calculating the world market potential value of substation automation programs; estimates of population, electric production capacity, operating T&D substations; market potential for substation RTUs and PLCs by world region; value of North American electric utility expenditures for SA&I programs - estimates and forecasts; and, North American market share estimates: substation controlling devices. For pricing information, go to www. newton-evans.com or call use at 1-410-465-7316.

2003 Schedule of Multiclient Reports

EMS, SCADA and DMS usage and trends in the world's electric utilities will be one focal point for Newton-Evans' research efforts during the first quarter of 2003. This will be the 7th study since the original report was completed in 1984. Also scheduled for the first quarter is a study on oil and gas pipeline SCADA systems worldwide, an update to our previous study in 1999. Already released during January 2003 is a condensed report on the North American relay market in electric utilities.

WORLDWIDE MARKET SURVEY

OF

SCADA, ENERGY MANAGEMENT SYSTEMS

AND

DISTRIBUTION MANAGEMENT SYSTEMS

IN

ELECTRICAL UTILITIES: 2003-2006

VOLUME III

MARKET ANALYSIS

March 2003

NEWTON-EVANS RESEARCH COMPANY, INC.

Second quarter reports will center around three topics: water and wastewater SCADA systems around the world (four volumes); performance based rate structures - North American regulatory developments as of mid 2003; and, a world market overview of wireless communications usage in electric, gas and water utilities.

A condensed report on North American substation automation and integration will also be released.

CIGRE's General Session Continues to be the World's Premier Conference for the Electrical Power Industry

by

Gerry George, UK Research Associate
Newton-Evans Research Company

This past summer the 39th Biennial Session of CIGRE (International Council on Large Electric Systems) attracted some 2300 delegates from 78 countries to the six-day Conference and Exhibition. This event held in the recently renovated and enlarged Palais des Congrès de Paris provided the ideal venue for the world's experts in research, development, manufacture and management of large power systems to share knowledge and experience.

The Session started with the Opening Ceremony on Sunday, August 25th with a keynote address by Mr. Francois Lamoureux, Director General of the Commission for Transport and Energy for the European Council (EC). This presentation gave delegates a complete overview of the Commission's activities in the energy field (electricity & gas), the current position of the European Energy Market, and the key issues that will be addressed in the future.

CIGRE Technical Program

The following are highlights from the group sessions . A more detailed CIGRE report by Gerry George can be found on our website.

Transformers – Decision-making, including the technical issues relating to lifetime performance, maintenance and monitoring, linked top risk assessment and life cycle cost economics were the key subject areas in the contributions received from authors from 13 countries. It is evident that online monitoring systems are now proving effective in extending the service life of the traditionally reliable power transformer.

Substations – The contributions to this session were presented by a number of manufacturers offering 'tailor made' equipment on the basis of standard ∨

modules and utility examples of innovative design to overcome a variety of problems. Substation designers now seek to offer utilities compact, flexible and integrated solutions and for multifunctional substations with a range of facilities can be extended to include advanced metering, power quality enhancement, network protection and control automation. The relative merits of GIS and AIS solutions under differing operating conditions were discussed while a paper from Japan utilities outlined the design features of 275 kV underground substations equipped with GIS equipment (switchgear and transformers) now installed in city centres. Reservations were expressed on the level of economic benefits associated with condition and risk based maintenance strategies; the general opinion suggests a 20% maximum saving. The session also discussed the increase in the availability and application of mobile substations. These are often used in developing countries as an interim solution in high load growth area. Another application is the temporary installation at short notice following the failure of a major substation.

Power System Protection and Local Control – Papers from United Arab Emirates, UK, Norway, Finland and USA outlined information on the design, cost, benefits and system performance of substation automation and network control systems. The discussion concluded that with further work on information processing and information management the data provided by substation automation could increase the overall benefits. The second part of the session discussed papers dealing with the refurbishment of protection and control functions in existing transmission substations with reports from Japan, Poland and the Netherlands.

They basically addressed the key issues of *when*, *what* and *how* to change, when the pace of development of protection, control and telecommunication equipment suggests systems are considered obsolescent in less than 10 years.

Power System Communication and Telecontrol – One of the new issues that deregulation of the energy industry demands is the utility’s ability to integrate, consolidate and disseminate real-time information; hence, utilities now need to use telecommunication and IT systems. The most significant issue addressed was the question of propriety versus open standards in communication within substations with end-users stressing the ‘lack’ of interoperability due to the lack of a standard protocol. Alstom, ABB and Siemens will use IEC 61850 when available and this will address all of the end users' current concerns. Delegates confirmed that the Internet Protocol (IP) now used for power system operation enables access to substation data in a transparent way reducing O & M costs, but this requires a good telecommunication system not available in all countries, e.g. Africa.

Power System Planning and Development – This well supported session was arranged with three preferred subjects for discussion. On ‘*Challenges facing rapidly developing power systems*’ the most interesting responses received from delegates were linked to the quality of innovations and new technologies management. Differences in the approach ranged from EPRI’s proven process for R & D and demonstration of new innovations before field application. A similar arrangement applies in Brazil. However, in Norway, the Regulator can impose penalties to deal with the risk associated with new technology equipment.

The ‘*Impact of the electricity market on network structure and the consequences for power system development’* attracted contributions from France Spain, Australia, New Zealand and the CIS countries on the positive and negative aspects on the role of stakeholders in decision-making. Other topics on which international experience was shared included planning criteria, non-transmission solutions, energy market models and industry structures.

Power System Analysis and Techniques – Restructuring of power systems has left the decisions on the need for new generating capacity to markets instead of centralised planning authorities. The impact of this change was discussed in this session under the subject area of ‘*Reliability standards in competitive power systems*’ and contributors from South Korea, Brazil, China and Egypt illustrated the use of interconnection as a means of improving system reliability.

For additional information on CIGRE see: http://www.cigre.org