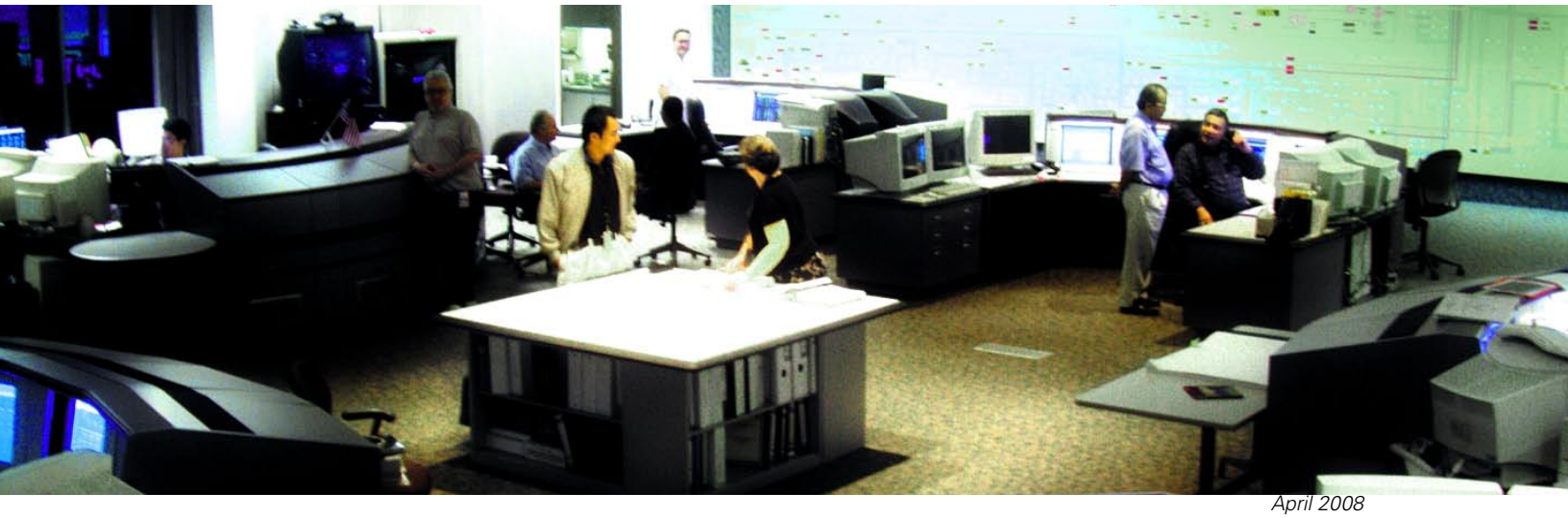
NEWTON-EVANS RESEARCH COMPANY

Market Trends Digest



April 2008

Preliminary EMS, SCADA, DMS Study Findings

International control systems operations trends vary from North American counterparts with differing priorities for "smart grid" initiatives and communications methods and protocols. Our newest international study of electric power scada and energy management systems finds increase in adoption of cyber security defensive measures.

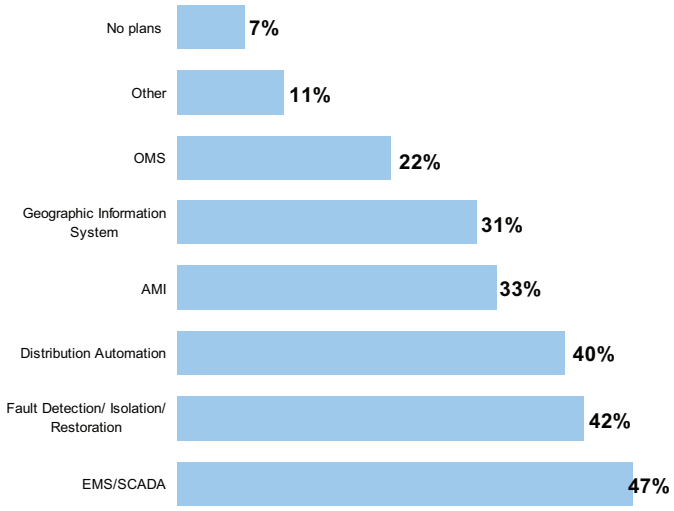
This article highlights preliminary findings and observations from Newton-Evans' multi-month study of transmission and distribution monitoring and control systems used in international electric power utilities. To date, we have received close to a 20% increase in responses (including six new countries) from the 2005-2007 study. Early highlights of the international 2008 study of mission critical, real-time electric utility operational systems including energy management, supervisory control, and distribution network management include the following:

OUTAGE MANAGEMENT: About forty percent of the international utilities surveyed so far this year have implemented a separate outage management system (OMS). This reflects an increase from 2005's 30% of responding utilities reporting having a separate OMS at that time.

POWER GENERATION MANAGEMENT: Generation management systems (GMS) are also experiencing an increased level of activity this year, at least among the early international respondents. In the 2005 study, only a handful of participating international utilities had reported use of, or plans for, a separate GMS. The percentage this year has risen to fourteen percent thus far into the study.

LINKAGES TO EXTERNAL SYSTEMS: Linkage to other utility enterprise systems continued to be on the increase on a global scale despite cyber security concerns. For many sites, the key to remaining secure seems to be either: (a)

Of the following "Intelligent Grid" components, where is your utility's primary focus from 2008-2010?
International utilities



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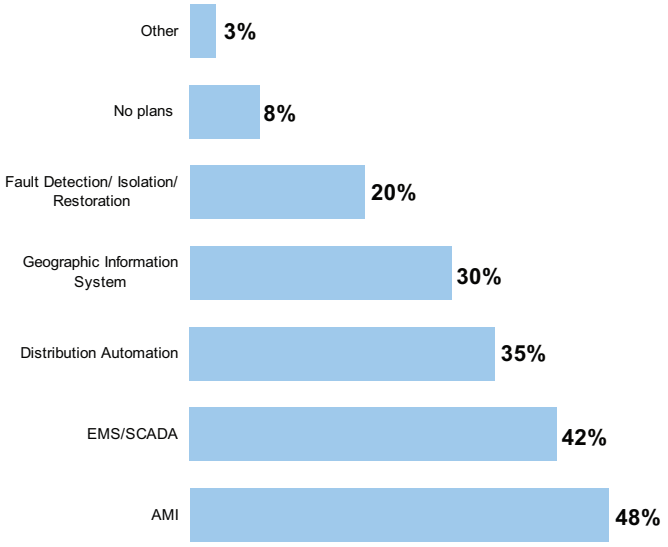
Of the following "Intelligent Grid" components, where is your utility's primary focus from 2008-2010?
North American utilities



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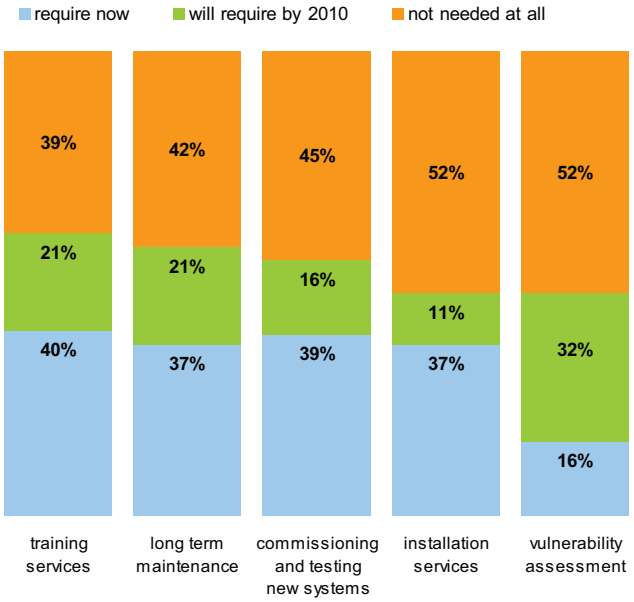
Demand for third party services in control center activities

International utilities



the restricted provision of non-real-time access via periodic downloads to authorized requestors or (b) indirect access to and from the control system via historian files.

The most frequently mentioned plans for additional control system links this year from managers at international control centers were reported as: Geographic Information Systems (24%); enterprise application integration (24%) and customer information systems (20%). The key linkages already in place included historical record-keeping systems and files, power plants, other utilities and an enterprise wide area network. North American utilities were likely to be linked up with these as well, but with a lower percentage of utilities involved than at their international counterparts.

EXTERNAL SERVICES REQUIRED: By early 2008, about one-third of the international respondents, and one half of the North American respondents indicated a current need for one or more of the nine listed "services" that could be available from external service providers. More than one third of North American respondents now require training services, followed by "long-term maintenance agreements." Among international utility officials, commissioning and testing of new systems was in demand. Installation support and maintenance agreements followed. By 2010, utilities around the world plan to bring in outside help to conduct vulnerability assessments.

SMART GRID INITIATIVES: Just as there are important variances with regard to communications protocols, control systems supplier rankings, and new product development objectives within the global electric power community, so too are there differences in priorities for focusing on "smart grid" initiatives. International utilities are placing more emphasis at this time on automating the distribution network and upgrading their control systems, while North American utilities are more likely to emphasize automated metering infrastructure as the priority task for enabling the smart grid.

More information on the Newton-Evans Research series entitled: Worldwide Market Study of Energy Management Systems, SCADA and Distribution Management Systems in Electric Utilities: 2008-2010 is available. E-mail information requests to eleivo@newton-evans.com or to lforrest@newton-evans.com.

NOW Available

Newton-Evans is pleased to announce that the first volume of our eighth publication of The World Market Study Of SCADA, Energy Management Systems & Distribution Management Systems In Electric Utilities: 2008-2010 is completed and ready for release. This volume, titled *Volume I - North American Market Survey and Analysis* is an in-depth, comprehensive look at control systems planning and usage patterns among 145 leading utilities from the United States and Canada. The breakout of the American respondents is as follows: 30 IOUs, 46 Public Power, and 51 Co-ops. A total of 18 Canadian provincial and large hydro utility participants also participated in this year's study.

Key issues that are addressed in the Volume One report include: 1) Approximate number of RTUs, substation PLCs, bay controllers and substation controllers currently installed; numbers and types of SCADA/EMS/DMS in use, (as well as anticipated new systems and field equipment planned for installation by year-end 2010) communications protocol usage patterns and trends for adoption of IEC 61850; 2) Mentions of control systems suppliers to be considered for future procurements; 3) Utility plans to implement a separate outage management system (OMS) and/or a generation management system (GMS) by year-end 2010; 4) Level of interest in 23 applications/functions associated with EMS/SCADA/DMS and more 300 additional data points gathered from each survey respondent. Smart grid priorities are ranked in the study from the operations center point of view.

Preliminary findings of the 2008 edition of the much-acclaimed research series have already been published in trade publications such as Utility Automation & Engineering T&D (April 9th, 2008), and online at EnergyCentral.com professional edition as well as Metering.com's e-magazine.

To order this report, priced at $2,500, please see the order form on the following page. You may place your order by phone (1-800-222-2856), or fax the order form to (1-4010-750-7429). By May 5th, online ordering of this report will also be available from our website www.newton-evans.com

Pre-Order *The World Market for Substation Automation and Integration Programs in Electric Utilities: 2008-2010* before June 1st & receive a 15% discount PLUS submit up to Three (3) Survey Questions[1, 2]

Subscribe to our Substation Automation study before June 1st and spend only $6350 for the entire four-volume study! That's a total savings of $1,125![1] Savings aside, you would also be assisting in the design of the study by submitting up to three (3) questions for possible inclusion[2]

This multi-volume study, scheduled to begin in June, will look at trends for both North American and international electric utility markets for substation automation and integration systems equipment and instrumentation for the 2008-2010 time frames.

1 In order to qualify for the benefits stated above, prepayment must be included with pre-order form
2 Questions submitted will need to be reviewed by Newton-Evans Research Company, Inc. for relevance before being committed for use in the survey

NEWTON-EVANS RESEARCH COMPANY

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To order our reports, complete this form and return it to us via fax or email with your credit card or purchase order information. Our fax number is 1-410-750-7429 (toll free inside the United States: 1-800-847-1877); email requests may be sent to eleivo@newton-evans.com. You may also send a check or money order with this form to **Newton-Evans Research Company, Inc., 10176 Baltimore National Pike, Suite 204, Ellicott City, MD 21042, USA.** For further information or to speak with a sales representative, call us at 1-410-465-7316 (toll free 1-800-222-2856).

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The Smart Grid... A Lot More Than Meets the Eye

Charles Newton, CEO, Newton-Evans Research Company, Inc.

This article is the first in what will be a series of related articles to appear in *Market Trends Digest* over the next 18 months to discuss and describe the fundamental building blocks of the nation's and the world's Smart Grid and the marketing opportunities and operational challenges associated with these components.

For more than 30 years, Newton-Evans Research Company has been studying the building blocks of what the world now terms the "smart" or "intelligent" grid. In so doing, our team has examined the technology, the adoption, the utilization and the markets for more than a dozen or so major components of today's (and tomorrow's) intelligent grid.

There are many aspects of Smart Grid development, some of which involve administrative as well as operational components of an electric power utility, and include IT as well as Operations and Engineering. . . Administrative management of CIS and GIS as well as control center and dispatching operation of OMS and DMS. . . Substation automation as well as true field automation. . .Third party services as well as in-house commitment.

All of these soon-to-be-inter-related activities need to be viewed in light of their value added as well as the effect of their involvement with one another. If the utility has not yet done so, it must strive to adopt a systems-wide approach to problem solving for any one grid-related activity. Decisions made for one aspect of control and automation have an impact on other components, based on the accumulated 40 years of operating in the "digital age."

As these Smart Grid building blocks are put into service, as they become integrated and accessible remotely, the overall Smart Grid necessarily becomes more complex, more communications-centric and more reliant on sensor-based field developments as we move into the near future and as technology enablers rapidly enter into the marketplace. In some sense, it reminds me of the construction of the International Space Station . . . it takes time . . . it is one component after another. . . No quick solutions . . . very systematically approached from the onset.

We are often asked about the "buckets" of spending for Smart Grid implementations. This is the trigger for the supply side of the Smart Grid equation. Suppliers are capable of developing, and will invest in the required R&D for any aspect of transmission and distribution network development, if favorable market conditions exist or if market outlooks can be supported with field research.

Newton-Evans is itself commissioning a 12 month multi-client study to be called "Smart Grid Development: Technology Foundations, Market Realities and Business Objectives". Monthly summaries will be provided to clients during the course of study. Hundreds of major electric power utilities from around the world have already contributed substantially to this effort via our recent studies of Smart Grid components.

Our current global study of EMS and SCADA has obtained information on 2008 Smart Grid priorities from more than 200 leading utilities. Our substation automation study begins in May and will involve an equal or larger number of utilities. The next protection and control study begins in September and will involve perhaps 300 major utilities from around the world. Together with recent studies on switching, transformers, feeder automation, OMS, communications, metering and other control center topics, we will be tackling the issues of "topic integration".

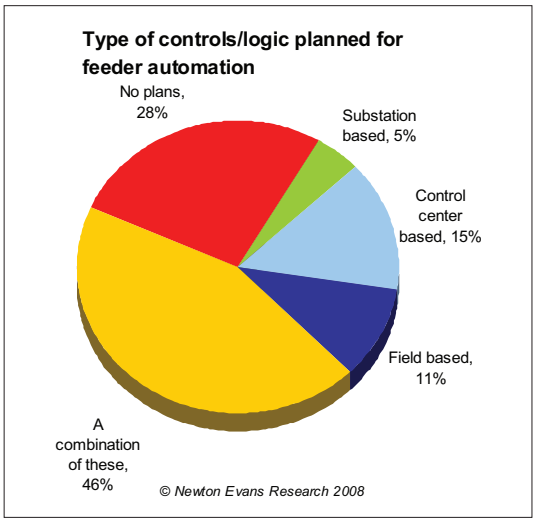
(Smart Grid cont'd.)

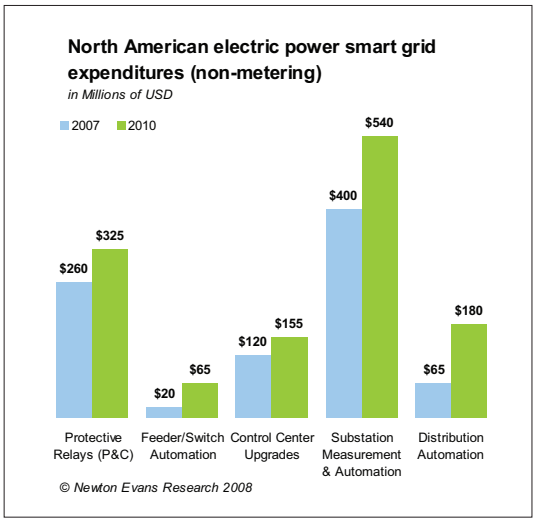
In looking at the operational/engineering components of Smart Grid developments, centering on the physical grid itself (whether a transmission grid, or a distribution grid or both) one must include what today comprises protection and control, feeder and switch automation, control center-based systems, substation measurement and automation systems, and other significant distribution automation activities. See the associated chart (North American Electric Power Smart Grid Expenditures) to form an idea of the size and growth trends in this "subset" of Smart Grid spending.

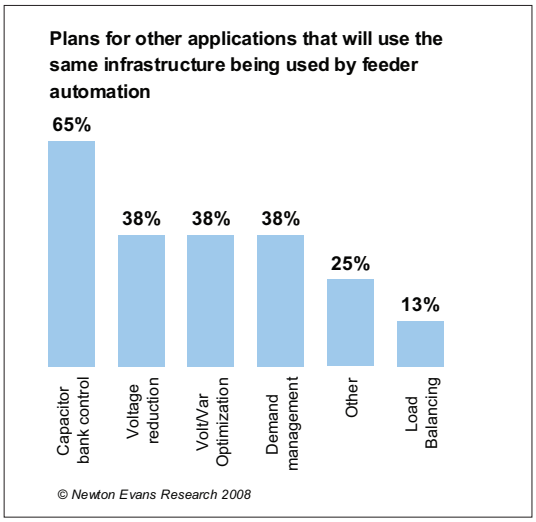
On the IT and administrative side of Smart Grid development, one has to include the upgrades that will definitely be required in the near- or mid-term, including CIS, GIS, OMS and wide area communications infrastructure required as the foundation for automatic metering.

Based on our internal Newton-Evans' estimates and those of others, spending for grid automation is pegged for 2008 at or slightly above one billion dollars nationwide and will approach $3.5 billion globally. When (if) we add in annual spending for CIS, GIS, meter data management and communications infrastructure developments, several additional billions of dollars become part of the overall Smart Grid pie.

Newton-Evans' ongoing work on Smart Grid will stay within the realm of the physical grid, emphasizing operational and engineering building blocks (including operational IT and telecommunications deployments to support grid operations) required for the transmission and distribution side of the equation. Market measurements will be made throughout the study for each Smart Grid building block.







The Washington Energy Track: Looking in from the Outside

Charles Newton, CEO, Newton-Evans Research Company, Inc.

In the first quarter, Newton-Evans Research (in the person of the author) has been represented at two Washington D.C. energy-related conferences dealing with energy policy issues. The U.S. Energy Association (USEA) was the sponsor of the Fourth Annual State of the Energy Industry conference held at the National Press Club on January 16th. USEA was also a co-sponsor for the February 5th Powering Our Low Carbon Future conference along with the U.S. Department of Commerce. Three more Washington conferences also appeared to merit our attention and we are reporting on each of these conferences.

Fourth Annual State of the Energy Industry:
Mr. David Manning, EVP of National Grid USA, kicked off the January 2008 briefing with introductory remarks on the current state of the energy industry in the U.S.A. This topical, timely and well-received talk segued into the panel discussion of "Energy Issues Overview for 2008" with three leading energy association CEO's from the Edison Electric Institute, American Petroleum Institute and the American Gas Institute. These officials summarized several of the various energy issues confronting the U.S. today (from global warming, to the role of renewables, to the ability for the U.S. to gain some degree of independence and energy security in the future).

Following this concise overview of energy issues, speakers from four organizations (Electric Power Research Institute, the Alliance to Save Energy, the National Mining Association and the Nuclear Energy Institute) tried to respond to some of the energy issues and challenges thrown out by the previous speakers. Each provided a view from the perspective of the energy industry mix represented by their associations or institutions.

(Washington... cont'd.)

The final afternoon panel discussion focused on climate change and other legislative and regulatory issues. The CEOs from the American Public Power Association, Center for LNG, Natural Gas Supply Association, Solar Energy Industries Association, Interstate National Gas Association, and Electric Power Supply Association all spoke on climate change, legislative issues and changes in regulatory policy affecting their members, and indirectly, the country's energy consuming public.

A few takeaways from this conference included points brought up by one or more energy industry influencers during the session:

1) The current energy legislation is really not an energy bill but a climate bill and EEI is not supportive of this approach. The most important thing we can do immediately is to educate the public regarding energy issues confronting the nation and the world. No one is doing this yet. This should be part and parcel of a national energy policy.

2) The oil component of the energy mix does not have any sense of impending energy independence in its future. According to Newton-Evans findings based on DoE information, this is certainly the case for natural gas, but not so currently for crude oil. While Canada provides the single largest country source for both imported gas and oil, OPEC "owns us" for imported oil, being responsible for about one third of our total demand (principally from Saudi Arabia, Nigeria, Venezuela and the Gulf States). Non-OPEC is slightly larger – about 40% (Canada, and Mexico principally), with Norway, Russia and Bolivia also important, while the US produces the remainder. We could probably change this scenario – perhaps dramatically - with a redesign or retrofit of our current oil refining facilities to accept oil sands from Canada, as suggested by the API speaker.

3) Coal is growing as percent of the base load of electricity production. Again, a "surprising" observation to us. However, if we can get clean coal technologies out of the lab, and available at a reasonable cost, this statement could be realized.

4) The U.S. has 27% of the world's coal reserves, which is enough for the next 200+ years, in most views.

5) By 2050 EPRI expects to be able to fully decarbonize electricity production. I think that is pretty optimistic. We should be able to fully decarbonize by 2050 without a doubt… but the bigger questions are, "Will the federal energy policy sustain such developments as this?" and, "Will the coal generators be able to adopt the technology and live with the costs of doing so while complying with CCS mandates? Who will drive this to fruition?" Not the private sector. . . not on its own . . not without guidance, prodding and legislative action! There are simply too many viewpoints with vocal advocacy representation . . . each with deep pockets for their constituents.

6) A reading of the EISA dictates a 5% reduction in CO2 by 2020 as well as an electricity demand reduction of 4% by 2020. Is this a demand reduction from current levels? If so, it really means a substantial demand reduction in our energy future overall. That is simply

(Washington... cont'd.)

because our demand and planned new electric energy needs continue to rise at the rate of 2 -4% per year. Who will implement this and who will ensure that it is on track? DoE? How about a strong and forceful national energy policy that provides direction on how to achieve this objective?

7) EERS – Energy Efficiency Resource Standards are going to be very important to our energy security in the near future. Hmmmm, no argument here. Who will serve as the get-tough, take-charge implementers of such standards? Why not consider a public-private sector team arrangement?

8) The nation is going to require a large number of new nuclear plants to meet energy demands by 2030. This could mean as many as 35 new nuclear plants and/or 240 gas plants coming on line over the next 20-25 years. Quoting here: "All U.S. nuclear waste from the dawn of the nuclear age until today would fit onto a football field, with waste accumulating as high as the goal post cross-bar." (Source: NEI) That doesn't seem like much waste to me for 50 years of excellent service. Just think about how much garbage and trash we heave out each week at home. Oh, just a thought, but who is controlling access to the nuclear football stadium on game day and on off-days so a knowledgeable bad guy doesn't go and try to grab just a handful of nuke material? Yucca Mountain is still the best and most logical site. When first conceived, the site was in the middle of nowhere. We have spent billions of tax dollars developing the facility. Now we have to contend with the NIMBY crowd of urban Nevadans, as the waste situation continues to deteriorate and cries out for a more permanent solution.. We can't afford a situation analogous to let's say, what a New York City garbage strike's effects are on the streets after only three days.

9) Solar energy industry will become the low cost energy resource option by 2017. Photovoltaic solar growth reached 70% in 2007 over 2006. There is a great deal of interest in solar power industry investments. Why can't we just produce more silicon dedicated to solar use to lower the primary materiel cost and get solar moving faster? Why don't we consider building a federally-operated plant to provide the semi-finished materials needed? Sounds like a national initiative worthy of consideration!

10) Gas is seen as the "bridging fuel" for power production until renewables become a higher percentage of base load. What will that development do for natural gas consumers at the residential level? We will require a few million TOU meters or real-time pricing incentives for the U.S. natural gas customers.

Powering Our Low Carbon Future

This one-day symposium was held in the Rotunda of the magnificent Ronald Reagan Building and International Trade Center just down Pennsylvania Avenue from the White House. About 150-175 people attended the full-day session, including some energy industry heavyweights, from the various Washington energy-lobbying organizations (which prefer to be called by the more endearing term "the Washington energy advocacy community"), Department of Commerce officials, Congressional aides, and some executives from various industrial organizations (such as Fluor, Caterpillar, GE, Chevron and IBM) and only a very few major utilities (PEPCO and National Grid, as well as maybe one or two others).

Following opening remarks by Mr. William Sutton, Assistant Secretary for Manufacturing and Services at the U.S. Department of Commerce, and by Mr. Jamie Estrada, Deputy Assistant Secretary for Manufacturing at Commerce, Dr. Larry Makovich provided some eye-opening information about critical energy choices confronting not only America, but also the world community. Dr. Makovich is the Managing Director of Cambridge Energy Research Associates, a prominent Boston-area think tank for strategic energy issues. CERA has worked with many clients in both the private and public sector and has a large staff of top-notch research associates available to conduct comprehensive global energy policy studies. The newest CERA study, Crossing the Divide, focused on the possibilities for a low carbon energy future. The findings from this study served as the basis for the keynote address

The morning panel sessions followed the CERA talk, with an initial panel discussion held among several important stakeholders in low carbon energy futures, including speakers from Chevron, Credit Suisse, Suez Energy and National Grid US. The second panel session included speakers from the manufacturing sector (GE, Ace Clearwater) and two energy associations (the Nuclear Energy Institute and the Solar Energy Industries Association).

·Little known factoids: Chevron is the world's leading producer of geothermal energy. Further, the United States is the world's largest producer of geothermal energy. Source: Chevron.

The luncheon keynote on U.S. competitiveness was delivered eloquently from prepared text, even if no earth-shattering new pronouncements were provided in the speech delivered by Mr. Carlos Gutierrez, Secretary, U.S. Department of Commerce.

The afternoon speakers included Mr. David Bohigian, Assistant Secretary for Market Access and Compliance at the Commerce Department, and Mr. James Connaughton, the Chairman of the White House Council on Environmental Quality. Both speakers spent time describing the critical role of the private sector in coming up with solutions to achieve a low carbon energy future. They argued for no federal interference, no roadblocks in the way of the private sector working to resolve this critical issue by coming up with optimal solutions.

I was left with nagging doubts about the efficacy of a "hands off" approach on the part of the federal government. Just look at the ongoing confusion over deregulation and restructuring which has resulted in the balkanization of the power industry with 51 different playing fields and some states moving away from deregulation to

(Powering... cont'd.)

re-regulation of the industry. It sometimes appears to me that there are mysterious undercurrents - probably no more than the "do nothing" attitudes sometimes prevalent in D.C. - that are directing our lack of energy policy so that the private sector will solve the problem in a market-oriented approach. Well, if deregulation is any indication of the success of such muddled thinking, then we have a real energy leadership problem in our nation.

For once, I think eminent domain regarding a long-term national energy policy has to take hold at the federal level. "States' rights" may have to be overridden to help the country establish a more egalitarian energy playing field and marketplace. One just has to look at the opposition that has risen over the national transmission corridor siting plans. When first announced, it seemed as if this was a logical and necessary development and no one could possibly argue against the merits of the proposed siting arrangements. Well, I was wrong. Strong opposition has come up even from states like West Virginia and others having lots of wide open space available for transmission line siting. Such opposition may defer or totally thwart this obvious energy security requirement.

The rest of the afternoon was divided up into two ninety-minute time periods during which three tracks of concurrent sessions were held. Session topics included energy research, development and demonstration; market adoption and deployment, and financing the deployment of clean power. The second period sessions covered regulatory issues, public acceptance issues and smart grid topics.

Summary of Observations

At the Low Carbon Energy Future conference, Mr. Tim Richards, a senior government relations manager with General Electric Energy, stated one aspect of the nation's policy dilemma well when he said what the country needs is "policy continuity" for energy. He was referencing the need to have long-term energy policies in place (similar to the European Union) to encourage suppliers to invest in R&D and for large energy users to have an opportunity to "buy in" to new energy technologies with certainty they were on the right path. None of the panelists took umbrage with this and most of the audience seemed to agree.

However, we need not only policy continuity; we need a cohesive, coherent national energy strategy and policy, and that cannot and will not come out of the private sector. There are simply too many special interests, many of whom truly believe they have the best or most appropriate solutions and so they won't budge or compromise. Others will play the waiting game for their friends in high places to help them get their points of view across in a beneficial manner (to themselves and their organizations).

The end of the session meant time for the commute back to Baltimore. So for the second time in this still young new year, for our readers across the country and around the world, I retraced my route, taking the Metro subway back to Union Station to catch a train from the "dark suits" of Washington D.C. back to relatively blue-collar Baltimore, a city though only 30 miles distant from the

nation's capitol, is well outside the purview of the beltway bandits. Mulling over what I had heard from the dozens of speakers at these two very informative (at the strategic and policy levels) Washington conferences so far this year, I could not help but think about our seeming national lack of vision regarding energy policy at this late date.
These first two 2008 Washington conferences had included speakers with outstanding public speaking skills, (an absolute requirement in Washington circles) and provided knowledgeable overviews of the current top level issues confronting the energy industry. There remain a great number of open issues, technology development concerns, and unresolved policy issues facing the energy industry. This is the situation whether one has a stake as an energy producer: utility generator, merchant producer, or industrial co-gen; an energy sourcing perspective: fossil, nuclear, renewables; or an energy consumer: industrial, commercial, residential.

Now that I have recovered from attending the first two Washington conferences of 2008, I am preparing for the next three conferences which are coming up shortly. This week I will attend and report from the National Electricity Delivery Conference, sure to be two days of important discussions with the lineup of regulators, utilities and associations that will be speaking. The theme for this conference is: "The role of electricity delivery infrastructure in addressing climate change, demand growth and energy security". Sounds like a great time ahead doesn't it? But then I am a fellow who travels the world and takes snapshots of electric power substations along the way.

For our European clients, you have an opportunity to hear Chuck Newton speak at the upcoming PowerGrid Europe 2008 conference in Milan. On Wednesday, June 4th, Chuck will moderate a session on network applications "Our dissection of the smart grid continues with a look into the specifics of network applications during this session. Experts examine whether we can easily switch from our "reactive" distribution network to one that can work ahead and project possible problems, the way an intelligent section of an intelligent grid should. We'll additionally examine islanding within those distribution networks. "

If you are interested in attending, you may register at the Pennwell Publishing site http://pgrid08.events.pennnet.com/fl/home.cfm?Language=Engl , and if you do so prior to May 27th, you will receive FREE Entry to the POWERGRID Europe exhibition. For more information, contact Ms. Debbi Boyne; Phone: 1-918-832-9265; Fax: 1-918-831-9146; E-Mail: dboyne@pennwell.com