Probing the Fundamentals of High Performance Buildings

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- Smart Grid, Cybersecurity, Electric Vehicles, & HPBs
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These are exciting times at NEMA. This month, I’d like to discuss with you three specific topics.

**HIGH PERFORMANCE BUILDINGS**
Whether the project is industrial or commercial, the role of NEMA members in buildings is not simply to provide products for the construction of the building. Our products make buildings smarter, safer, more functional, and more efficient. In other words, we put high performance into buildings. Long after the hard hats and caution tape are removed, NEMA member products are still at work, providing savings for building owners over the lifetime of the building.

NEMA is the foundation of building the future. The NEMA High Performance Buildings Council brings together manufacturers for joint ventures, identifying practical use and application of building metrics, labeling, and energy-efficiency incentive mechanisms. As buildings link into the Smart Grid, NEMA leads in standards development for interoperability. The High Performance Buildings Council is a 2012 strategic initiative and is now open to all NEMA members. I urge you to take a seat at the table.

**ESFI COUNTERFEITING CAMPAIGN**
Electrical Safety Foundation International has begun an anti-counterfeiting campaign. This is an important activity for our industry. I direct you to page 22 for more information concerning this effort to eliminate electrical counterfeit products and save lives.

**IDEA**
The Industry Data Exchange Association (IDEA) is an e-commerce organization started through a partnership between NEMA and NAED. The goal is to drive down costs within the supply chain and provide real-time sales data to serve the customer better. IDEA membership is growing at a record pace. If you want to remain relevant as a manufacturer, you should be actively engaged with IDEA.

In vigorously seeking new paths for success, we continue to set the standard for excellence.

Evan R. Gaddis
President and CEO


As an asset class, buildings are earning a new respect, creating strategic value and delivering bottom-line business benefits to public and private enterprise. Certainly the traditional functions associated with buildings remain, but now business leaders are calling on them to earn their keep financially while supporting business and social responsibility goals.

From the CFO to the facility manager, organizations are constantly looking for ways to make their buildings smart, efficient, and sustainable—high performers ready to drive business results.

**HIGH PERFORMER**
What makes a building a high performer to a federal housing agency may not be the same as the business that develops and manufactures electronic systems for the Department of Defense. Every enterprise has unique requirements and special demands, but at the heart of a high performance building are a few primary, common denominators: interior environmental quality, occupant safety, and energy efficiency.

Supporting these common functional imperatives is building automation technology—the connective glue that integrates disparate building mechanics and systems to create comfortable, safe, and energy-efficient buildings.

**TOP INTEGRATOR**
No discussion of building performance can be divorced from monitoring and automated control functionality. Building automation still does very traditional things—controlling mechanical systems, transferring heated or cooled air to interior spaces, and managing all the devices that drive performance. Building automation’s role has been expanding exponentially while integrating system after building system so that information can be channeled, analyzed, and centrally managed.

One of building automation’s biggest contributions involves controlling and managing the amount of energy a building consumes. According to the Environmental Protection Agency, as much as 30 percent of it is wasted. Fortunately, in Siemens’s experience, consumption can be reduced by a similar percentage in virtually any commercial-scale building through application of mature, efficient building technologies.

**COST CONTROLLER**
When one considers that energy is the single largest and most controllable operating cost, the relative importance of optimizing an individual building’s energy performance becomes hard to contest. The connectivity building automation supports and the resulting building performance monitoring and interoperability capabilities it creates, brings new strategic asset management opportunities to the enterprise.

Organizations that deploy smart building automation technologies and energy control and management (ECM) platforms to multiple buildings across their real estate portfolios will be rewarded with cascading benefits including energy use transparency, lower consumption, and reduced energy operating costs. Siemens is helping the state of Mississippi with this strategy right now, implementing ECM statewide across its 900-building portfolio. But building automation is ready to serve a higher calling. Familiar to many is the fact that in the U.S., commercial buildings consume more than 40 percent of all energy. It’s an eye-opening metric and commercial building owners, the federal government, and energy utilities have been actively pursuing ways to balance this demand while supporting higher societal goals related to sustainability, energy security, and reliability.

**ACTIVE PARTICIPANT**
For the first time as a class, buildings no longer have to be passive consumers of energy. Now, through building automation and the Smart Grid, individual and groups of buildings can interact with the existing power grid without manual intervention, automatically aggregating load on a level and scale utilities can wield to manage peak demand.

Lofty societal goals aside, what’s in it for building owners?

As active participants, building owners can take advantage of utility rate discounts and financial incentives while directly influencing local grid stability. A stable grid leads to bottom-line benefits like longer-term rate pricing stability, as well as power quality and reliability, especially around large urban centers. Power outages are costly—some estimates are as high as $11,000 a minute for data centers—and the more critical the environment the higher the price tag.

Through building automation, smart, efficient, and sustainable buildings will make an even greater contribution to profitable commerce and society.

Whether managing one or one thousand buildings, the technology is ready. It’s never been a better time to leverage building automation to shape the future.
Meeting Electrification Demands of High Performance Facilities

Luis M. Ramírez, CEO, GE Energy, Industrial Solutions

The electrical distribution industry today is working to improve systems, equipment, facilities, and safety while simultaneously helping customers solve energy’s toughest challenges and reduce their electrical energy costs. A key element of this effort is the development of high performance buildings that use integrated solutions and green building designs, either during new construction or a retrofit.

From a financial perspective, 75 percent of a building’s lifecycle costs occur after construction and are subject to the same inflationary and economic pressures as any other business so it is easy to see how important integrated solutions are to managing future energy costs and variances in occupancy usage. As technology leaders, we have to develop solutions that meet both the short-term (capital) and long-term (operational) objectives.

GE Energy develops products and services that enable increased efficiencies within a building’s ecosystem. We design products that enable us to collect and analyze data that building owners and operator customers need to run their facilities more efficiently.

We often think of the industrial and manufacturing sectors when we consider high performance buildings, but today’s technology also enables commercial institutions, such as schools and hospitals, to improve energy performance. Many schools that are trying to save money, for instance, have shifted to retrofits, especially in areas such as gymnasiums. Besides efficiency, we also consider safety. We help protect children and faculty inside the buildings, which can be used as community shelters in emergency situations. Moreover, schools can be where the green movement begins, by teaching children about ecologically sound use of energy.

In healthcare facilities, the concern is not just energy consumption. How we design buildings to manage critical power is essential to the operation of ICUs, surgery suites, radiology, HVAC/refrigeration, etc. To address critical power needs, we help customers design better performing buildings—new and existing—by pre-planning and re-factoring the way entire electrical distribution systems work.

For data centers which have high demand for energy, we also see the potential for sizable savings that can be achieved through the use of smart metering and monitoring solutions, along with sustainable system adjustments. These kinds of retrofits and replacements also provide green benefits that improve the interior environment, including equipment and people.

Transferring electrical energy to the right place at the right time has become an analytical, predictive process that relies on examining the “who, what, where, when, and how” of assets. Indiscriminate energy distribution, as was customary in the past, is just that—in the past. The new electrification ecosystem enables operators and building owners to make smarter choices.

With an increased focus on green building technologies, both energy users and providers will achieve higher efficiencies. This is imperative to industrial and commercial operations and environmental compliance.

The GE approach to the future of electrification is parallel to that of the Industrial Energy Efficiency Coalition (IEEC) and the High Performance Buildings Council initiatives, which are among NEMA’s important efforts in the past few years.

GE Energy’s Industrial Solutions business, a founding member of IEEC, is dedicated to the coalition’s focus on promoting the adoption of industrial and manufacturing processes that save energy and reduce costs. IEEC has been recognized in Congress and at the Department of Energy for its significant input into S 1000, the proposed Energy Savings and Industrial Competitiveness Act of 2011.

A comprehensive overview is necessary to ensure the most efficient use of electrical energy. That means not only sound engineering, but also sound solutions. These are the ingredients for creating high performance buildings.
On February 14, Rep. Charlie Bass (R-NH) introduced bi-partisan energy efficiency legislation, the Smart Energy Act (HR 4017).

NEMA has played a significant role in the development and introduction of this legislation. The focus of the bill is to promote simple yet effective ways to achieve greater energy savings in the U.S. while promoting economic growth.

One of the act’s key components is expanding the eligibility of an existing loan program at the Department of Energy (DOE) to establish the Building Retrofit Financing Program. NEMA member companies involved in efficiency, advanced metering, and distribution generation in buildings could potentially benefit from this program.

The bill would require federal agencies to participate in demand response programs where such programs are available and the agency’s mission is not compromised. Demand response programs, in their many forms, are tools to ease the strain on the grid during peak weather events and under other urgent grid conditions.

Federal agencies will also be required to report on best practices for the use of advanced metering in federal facilities, an effort that will demonstrate the benefits of these technologies in the federal government specifically, and in similar facilities more broadly.

Next up for HR 4017 is committee action in the House of Representatives. NEMA will continue to promote its passage.

Cybersecurity means different things to different people. For the electroindustry, its significance is ensuring the security and reliability of the electric grid.

Many view cybersecurity as an area ripe for bipartisan cooperation in 2012. However, sharply different perspectives on how to address these issues have already emerged on Capitol Hill.

SENS. LIEBERMAN AND COLLINS INTRODUCE CYBERSECURITY ACT OF 2012
The hallmark of this legislation, S 2105, is the provision of authority to the secretary of the Department of Homeland Security, in consultation with the private sector, other departments, and the intelligence community, to identify critical infrastructure whose incapacitation would lead to degradation in national security, catastrophic economic damage, or interruption of life-sustaining services.

The secretary would be given the authority to determine and enforce critical infrastructure cybersecurity performance requirements based on risk assessments.

SENS. MCCAIN AND HUTCHISON COUNTER WITH SECURE IT ACT OF 2012
S 2151, the Strengthening and Enhancing Cybersecurity by Using Research, Education, Information, and Technology Act, would facilitate information sharing between the federal government and the private sector on cybersecurity threats. The bill would enhance the criminal statutes for cybercrimes and promote research and development in cybersecurity. Reps. Rogers and Ruppersberger introduced similar legislation in the House: HR 3523, the Cyber Intelligence Sharing and Protection Act of 2011.

Critical Infrastructure Cybersecurity: Assessments of Smart Grid Security was held on February 28. Witnesses included experts from the Government Accountability Office and the Congressional Research Service.

From the perspective of the electric grid’s technology providers and device manufacturers, NEMA recommends that Congress, federal agencies, and states undertake a common approach across utility areas of control as well as state boundaries. Without a common approach, implementation of enhanced cybersecurity strategies will be very difficult for utilities, manufacturers, the National Institute of Standards and Technology, and standards development organizations.
New Provisions on Lithium Battery Transportation Become Law

Under a new law signed in February, the U.S. Department of Transportation (DOT) is prohibited from putting in place rules for the air transportation of lithium cells and batteries that are more restrictive than rules adopted by the inter-governmental organization governing air transportation.

The provision also applies to the air shipment of products packed with or containing lithium cells or batteries, which include lithium ion and lithium polymer rechargeable batteries, as well as lithium metal primary batteries.

NEMA, PRBA (the Rechargeable Battery Association), and a broad coalition of industries worked since March 2011 for passage of the provision and supported the intent of Congress to require DOT to bring U.S. regulations into line with rules written by the International Civil Aviation Organization. (See below.)

However, under the new law DOT is granted explicit authority to issue and enforce more stringent rules on a temporary basis if regulators are given credible evidence that an aircraft incident was related to carriage of these products.

The provision is included in the Federal Aviation Administration Modernization and Reform Act of 2012, signed into law by President Obama on February 14. Under the new law, DOT is expected to set aside many of the widely-criticized proposals from January 2010 on lithium batteries and equipment and to issue for comment a new supplemental notice of proposed rulemaking and cost-benefit analysis this spring. ✪

Craig Updyke, Manager, Trade and Commercial Affairs | cra_updyke@nema.org

Panel Tightens Regulations on Shipping Lithium Batteries, Accedes to NEMA Request

NEMA staff and members participated recently in a special meeting of the International Civil Aviation Organization (ICAO) Dangerous Goods Panel to set model regulations for the safe air transportation of lithium batteries and equipment that contain or are packed with lithium batteries.

NEMA advised the panel of the battery industry’s need for continuation of an allowance for air shipment of a small quantity of lithium batteries, such as four or eight consumer-type AA batteries, outside the full regulatory scheme applied to cargo classified as hazardous.

Michael Babiak of Energizer, chair of the Dry Battery Section; Charles Monahan of Panasonic; Marc Boolish, also of Energizer; and Craig Updyke of NEMA Government Relations participated in the meeting, which took place February 6–10, in Montreal, Quebec, Canada.

In recommending new requirements that require bulk air shipments of batteries to meet most, and in some cases, all of these regulations, the panel agreed to honor NEMA’s request and allow packages of no more than 8 AA-type or smaller batteries each to be shipped without a limit on the gross weight of the package.

Lithium “button”- and “coin”-size cells may be shipped together, but per-package weight limit of 2.5 kilograms applies. Both package types must carry a special ICAO label for lithium battery shipments. The panel also set new requirements for bulk shipments of batteries and equipment.

A detailed fact sheet on the results of the ICAO meetings and the new regulatory requirements is available at www.nema.org/gov/env_conscious_design/drybat under Transportation (Lithium Batteries).

As of press time, higher level ICAO councils were expected to approve the panel’s recommendations. Many countries (but not the U.S.) adopt the ICAO regulations, known as the Technical Instructions for the Safe Transport of Dangerous Goods by Air, directly and immediately by reference.

The requirements agreed upon in February will take effect for the January 2013 edition of the Technical Instructions. ✪

Craig Updyke, Manager, Trade and Commercial Affairs | cra_updyke@nema.org
NEMA, Allied Associations and Federal Agencies Collaborating on FBPTA Implementation

Making sure federal facility managers and contractors know how to operate their buildings as safely and efficiently as possible is a shared goal of NEMA’s High Performance Buildings Council, the General Services Administration (GSA), and the Department of Energy (DOE). These entities are working with additional partners to implement the Federal Buildings Personnel Training Act of 2010 (FBPTA).

FBPTA tasks GSA to identify core competencies involved in building operations, energy management, safety, and design; identify or establish ways for personnel to get training in these areas and demonstrate knowledge; and develop curriculum and continuing education on high performance buildings (HPBs).

Since GSA and other agencies lease space in non-government-owned buildings, managers for those buildings are also covered by FBPTA.

In February, NEMA met with Kevin Kampschroer, GSA director of Federal High Performance Green Buildings, to coordinate complementary approaches to accessing training resources.

NEMA joined the Electrical Safety Foundation International (ESFI), the International Association of Plumbing and Mechanical Officials (IAPMO), and the National Fire Protection Association (NFPA) to work on a web-based tool to present training resources for employees and contractors covered by FBPTA. GSA is leading construction of a facilities management institute with a web-based knowledge portal including links to industry best practices, programs, and training opportunities. GSA’s hub will link to NEMA-ESFI-IAPMO-NFPA materials.

Additionally, the Occupational Health and Safety Administration (OSHA) is mobilizing to help federal workers covered by the FBPTA. NEMA staff is involved in that effort.

According to Steve Rood, senior product line manager for Electrical Wiring Systems Division at Legrand North America, the upcoming enforcement deadline of FBPTA is the time to establish a collaborative training program for HPBs.

“GSA will be mandated to ensure that facility management personnel are properly trained in optimum building performance with respect to core competencies such as energy management and safety. NEMA members are uniquely positioned to take advantage of a strong and timely opportunity to establish the design and content of relevant training programs and certifications to meet this requirement.”

In coordination with GSA, DOE is expected to finalize later this year the listings of job knowledge and abilities required for each facility manager, energy/sustainability manager, and operating building engineer in a federally owned or commercial building.

NEMA provided comments on the draft “Job Task Analyses” in November 2011, and remains in touch with DOE and GSA since required knowledge and abilities determine needs for training.

Steve Molitor, Manager, High Performance Buildings | steve.molitor@nema.org

Craig Updyke, Manager, Trade and Commercial Affairs | cra_updyke@nema.org

Congress Directs DOD to Set Policy on Installation Energy Managers

In the National Defense Authorization Act for 2012, Congress directed the Department of Defense (DOD) to establish by June of this year a training policy for energy managers at military installations. The new law comes one year after Congress approved the Federal Buildings Personnel Training Act (FBPTA).

A NEMA-led collaborative is building a new website now to ease DOD and other federal agencies’ access to training resources offered by the high-performance building industries.

Key aspects of DOD-installation energy management include energy security and portfolio management of all buildings in an installation. Under legislation (including the Energy Independence and Security Act of 2007) and executive orders, federal agencies are required to assess their facilities’ energy performance and find ways to improve energy efficiency. The Army has launched a major effort to achieve net-zero energy installations through energy-use reductions and integration of renewable energy generation.

The new DOD policy should improve energy managers’ knowledge, skills, and abilities; improve consistency in their performance; and create forums for managers to exchange ideas and experiences.

DOD will collaborate with DOE on training energy managers for installations. The requirement overlaps and dovetails with FBPTA, which covers energy and water efficiency as well as electrical and life safety. It is to be implemented by mid-summer by the General Services Administration with assistance from DOE and the NEMA-led collaborative.

Craig Updyke, Manager, Trade and Commercial Affairs | cra_updyke@nema.org
Imagine using mold spores to optimize transportation systems, comparing a whale’s fins and the blades on a wind turbine, and designing a heat-resistant apartment building based on an African anthill.

At a meeting of the Smart Grid Interoperability Panel in 2010, a speaker from Biomimicry Guild did just that. The premise was that if you believe in evolution, then you have to assume that natural systems will adapt to optimize their performance in the world around them. It’s amusing to compare the elements of a high performance building (HPB) to a biological system:

**BRAIN**
Clearly the brain is analogous to a building control system. Just as the brain controls all of the voluntary and involuntary contractions of our muscles, the building control system provides this function for every other system that is tied to it. Standards such as the ASHRAE/NEMA Smart Building Information Model, being developed by the ASHRAE Standard Project Committee (SPC) 201, will further enable this functionality.

**CENTRAL NERVOUS SYSTEM**
When you touch a hot stove, in a fraction of a second the nerves in your hand send a signal to your brain that in turn, causes you to pull away before you are directly aware of the danger. Similarly, in the modern high performance building, a network of sensors and wiring carry the important status messages to the building control system.

**CARDIO-PULMONARY SYSTEM**
If building occupants represent the fragile cells needing sustenance, then it’s the heating, ventilation, and air conditioning (HVAC) system that carries much-needed blood and oxygen to keep us alive and comfortable.

**DIGESTIVE TRACK**
When you look into many building rating systems, water use is as much of an efficiency factor as electrical efficiency in high performance buildings. An inefficient building will consume water at a greater rate than a comparable efficient neighbor. In this context, plumbing is representative of the digestive track.

**SKIN**
The pigmentation in our skin, which affects our tolerance to sunlight, is controlled by a substance called melanin. Those who’ve had a case of frostbite understand that they are more vulnerable to repeated exposure to the cold after they’ve been affected. As our skin goes, so goes the building envelope. Not only is it our first line of defense against the forces of nature, but any damage to the envelope makes its performance more susceptible in the future.

**THE HIGH PERFORMANCE BUILDING**
The advent of microcomputing—the ability to embed computing power on a single chip—has led to a great deal of advancement in our society. Microcomputers embedded in HPBs will provide the same kinds of functions that take place in our bodies. Visualize lighting systems that brighten and dim themselves based on available light, just like the iris of your eye. Or imagine a thermostat that senses both temperature and humidity, and then engages the HVAC system to recirculate the air and make everyone more comfortable.

It’s almost to the point where the building will start to behave like it’s human…
How to Save Money and Resources—

Baselining Electrical Energy Consumption

Steve Montgomery, P.E., COO, 2D2C, Inc.

V
tiable electricity pricing has long been the norm for commercial and industrial buildings. Now, many utilities are using variable pricing for residential customers, too. In North America, the most common variable pricing model consists of higher prices at higher demand times. Usually the utility company objective from variable electricity pricing is to better align demand with grid supply.

Many customers think the change from fixed electricity pricing to variable pricing results in higher electricity bills. Smart conservation in conjunction with variable electricity pricing, however, can result in lower bills without modifying lifestyle, comfort, or building function. Shifting consumption to non-peak demand periods may impact lifestyle, comfort, or function, but may also result in utility bill savings.

Variable Electricity Pricing

As our population grows and we use more electronic devices, our gross demand for electricity increases. This increased load stresses the ability for utility companies to produce adequate electricity. The problem is amplified by dynamic grid load at different hours of the day and at different times of the year.

In winter, peak demand usually occurs in early morning and at dinner when lights are on and food is cooking. In summer, the use of air conditioning creates a large cumulative demand on the power grid, usually peaking between 2 p.m. and 5 p.m.

Peak load may exceed the supply capacity of generation. Extra capacity may be needed on super-hot days. One solution is to temporarily fire up legacy coal-fired generators. This short-term generation of extra supply capacity may result in extra carbon production (greenhouse gas, or GHG). To meet the extra demand without extra GHG output, utility companies need to add renewable generation resources, such as solar conversion panels, wind turbines, or hydroelectric generators.

As an alternative to installing more generation capacity, most utility companies are encouraging customers to shift consumption to non-peak demand periods. One method is to charge more for electricity during peak periods. Utility companies have spent millions on advanced meter infrastructure (AMI) by replacing manually-read electric meters with communicating smart meters, wide area network infrastructure, back-office computer systems, and associated software to support usage data collection and billing. AMI enables utilities to measure consumption more frequently, such as once every 15 minutes, for time-of-use billing.

High Efficiency Design of New Buildings

Building codes from ASHRAE\(^1\) and ICC\(^2\) now define energy efficiency requirements for new and existing buildings. Key standards include ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings, ASHRAE 90.2 Energy Efficient Design of Low-Rise Residential Buildings, ASHRAE 189.1 Standard for the Design of High-Performance Green Buildings, the International Green Construction Code (IgCC), and the International Energy Construction Code (IeCC).

Architects and engineers can reduce electrical energy consumption in high performance buildings by 30 percent with proper design; high efficiency motors, transformers, and lighting systems; use of natural resources, such as earth insulation and natural daylight; and even building location.

All transformers have core and conductor losses that result in heat. If the transformer is placed in an occupied area, extra heat may need to be removed. New transformers that meet the national efficiency standard use heavier gauge wires and better quality steel—thus they cost more.

Turning off devices when not needed, regulating heating / air conditioning, and optimizing motor controls can save 5 to 15 percent of total energy consumption in an existing building. Key components to reduce energy consumption include:

- energy monitoring of electrical loads
- on-off control of individual load devices
- programmable HVAC controls
- efficient modern lighting components
- renewable energy sources
- replacement or optimization of low-efficiency motors, motor controls, and transformers
- skinning buildings with thermal insulation

Getting the Facts

The first step in reducing building energy consumption is to measure and profile actual consumption. You cannot manage what you do not measure.

Gross energy consumption and data must be collected by reviewing historical energy bills. Data can be logged directly from most modern electrical meters. Many offer standard

\(^1\) American Society of Heating, Refrigerating and Air-Conditioning Engineers
\(^2\) International Code Council
wireless communication, such as ZigBee Smart Energy Profile. Dataloggers that communicate with these protocols can report consumption trends for up-to-date usage in regular intervals.

A few older analog power meters contain wireless communication. After-market electronic meter reader devices can convert visual meter usage indications into digital data with wireless communications. To identify problems and take accurate corrective action, however, building energy managers need more granular energy consumption data than what is provided by the premise power meter.

For easy analysis, types of energy consumption within a building should be categorized. Residential energy categories include HVAC, lighting, cooking, IT, and entertainment.

**Submetering and Plug Loads**

Submeters should be installed to monitor energy consumed by individual branch circuits or loads. Granular data from submeters can be sorted by category to identify baseline consumption. Generally, this data does not need to be “revenue grade” accurate. Total measurement accuracy of two percent is adequate and keeps the system costs much lower.

Some loads can be monitored at the electrical panel by installing current transformers (CTs) with dataloggers on each branch circuit. In a residential structure, branch circuits with a single load would include HVAC, window air conditioners, lighting, appliances, and water heaters. Most residential electric codes require each of these loads to have a dedicated circuit. In commercial and industrial applications, every heavy load should be supplied by a dedicated circuit.

Submetering kits can be applied where the load is a subsection of a building, a sub-panel, a branch circuit, or an individual load. These retrofit submeters use non-contacting CTs, CT digitizers (analog to digital converters), local datalogging, and a wireless communication system for data transfers. Ideally, the submeter should also measure the actual voltage to determine true power consumption. Some special circuit breakers can also meter and report power consumption.

To install the submeters on electrical panel branch circuits, a CT must be attached around each branch line wire. CT sense wires feed from the panel to a data acquisition and communication box. Each CT has a full-scale range (e.g., 40A, 100A, 400A, 1000A) and must be matched to the load size to ensure the best measurement accuracy.

Snap-on or clamp-type CTs have two halves to the ferrous toroid. Although they cost more and are not as accurate as continuous toroid CTs, they can be installed faster. Additionally, voltage sense lines must be attached from each phase leg on the protected side of a fuse or breaker to the data acquisition voltage inputs. The voltage and current signals together allow the acquisition box to measure power and power factor.

Almost all other loads must be monitored at the plug or receptacle to isolate consumption. One problem associated with accurate plug-load monitoring is the inherent portability of a plug load. It can be moved easily for user convenience. Most energy monitoring receptacles cannot track this movement. Thus, a central database that collects data from these energy monitoring receptacles will be inaccurately associating energy consumption with appliances that are moved to meet user requirements.

One vendor has developed a creative plug-based energy monitoring solution under the brand name SafePlug Energy. Its energy monitoring receptacle identifies each appliance by means of radio-frequency identification (RFID). The RFID tag uses architecture and data structure specified by the RightPlug Alliance (www.rightplug.org) communication standard. When a tagged plug is inserted into a receptacle, a RightPlug reader

![Figure 2. CTs can either be placed over wires or clamped around wires. Image courtesy of Itron](image)

You cannot manage what you do not measure.
detects its presence, reads the unique tag address, and reports it via ZigBee to a central database.

All energy data is associated with the unique tag address. This approach sets a new standard for ease of use and maintainability.

Figure 4. RightPlug RFID tags add a unique address to each appliance plug. Smart energy receptacles read the tags to identify what appliance is plugged in, even if appliances are moved. Image courtesy of 2D2C, Inc.

Cut Your Losses

The data collected from submeters and receptacle monitors often exposes some easy ways to cut back excess energy consumption. Exposed energy problems may include:

- damaged or worn equipment
- unnecessary 24/7 usage
- usage during peak electricity pricing periods
- low-efficiency transformers, HVAC, IT, and other equipment
- phantom loads
- unauthorized equipment usage

Unnecessary 24/7 usage, peak pricing usage, and phantom load waste can be slashed by installing load controllers. These receptacle or hard-wired load controllers can shut off loads during certain hours. Common applications for load controllers are on water heaters, space heaters, pumps, and lighting.

Programmable HVAC controls enable automatic adjustment of temperature set-points to match occupancy and weather conditions. These controls are almost identical to those needed for demand response events.

One example of energy waste is heating and cooling the same space simultaneously, as in IT centers where banks of computers produce heat while the operator area needs to stay cool. A simple solution is to isolate the warm area with thermal walls.

Another example involves lighting efficiency advances that can provide the same lumens with much lower power consumption. Even in existing buildings, lighting upgrades can pay for themselves in just months. Occupancy sensors and timers can further reduce unnecessary consumption. Best of all, new building designs can leverage natural sunlight to reduce the need for electrical lighting during daylight hours.

For many dynamic load applications, electronically commutated motors operate 15 percent to 20 percent more efficiently than AC constant speed motors. Although cost may not justify some retrofit applications, new building designs can have lower kilowatt/square foot consumption rates because of smarter installation decisions.

Once changes are made, a maintenance program is needed. Without permanent monitoring and improvement, buildings will typically lose up to eight percent of the energy efficiency improvements each year. Without automated monitoring and control of HVAC, lighting, and other loads, the loss can increase to 12 percent.

Building energy managers need an energy consumption dashboard to create quick and easy visibility of programs and operating status. The dashboards should automatically flag excess consumption issues for quick corrective action.

Many building owners and managers are beginning to upgrade existing buildings to IeCC and ASHRAE standards while many architects and engineers are upgrading new construction designs to meet IgCC.

Why spend the extra money? Because buildings that meet these requirements consume less energy, are more pleasant to live or work in, and have less negative impact on the environment. They also rent at higher rates, increase in asset value, and provide public relations opportunities.

The investment pays back.

Mr. Montgomery serves on the Smart Grid Interoperability Panel, NEMA High Performance Buildings Council, NEMA Smart Grid Council, NEMA Wiring Devices Section (5WD), and the International Association of Electrical Inspectors.
There is always something new. Every year, a buzz emerges about the newest phone, the newest car, or the newest service. Things come and go, rarely leaving a lasting impression. It’s easy to get tired of the constant evolution and begin to filter things out.

The same goes for the electroindustry—it almost seems as if electricians and electrical contractors have been working with the same technology for years. Now, however, something new has finally come along that promises to leave a lasting impact on the way people interact with electricity and their environments.

Changing Dynamics of Efficiency

Currently, most power companies produce electricity in a relatively inefficient manner. Power generated at dams, wind farms, with coal, or by other means is often required to travel great distances before it can be used by the consumer. In order to traverse these long distances, voltages are often increased to 500,000V and higher. These voltages are then reduced to 120V to power electric equipment inside homes and businesses. If generation resources, such as solar and wind, are located closer to the load centers, the overall efficiency can be increased.

Power suppliers aren’t the only ones operating inefficiently. Homeowners unknowingly waste energy with appliances and other home devices. Hot water heaters and other appliances are left on during the day drawing power. When some appliances are used, it’s often at a high electrical rate time.

Currently, consumers pay their power supplier based on the amount of electricity they use in a billing cycle. When bills start to increase, people play a guessing game to determine where to cut power usage and costs. When the savings are minimal, consumers are left scratching their heads.

This is where Smart Grid technology steps in. Quickly gaining momentum, it is being touted as the future of electricity management for power suppliers and homeowners.

How do these technologies affect power suppliers? The ability to monitor and control electricity closely will give electric companies the ability to manage their grids like never before.

Increased monitoring and analysis capabilities on the grid will allow electric companies to improve efficiency and reduce carbon footprints. Computers will communicate with power suppliers and electricians to pinpoint the location of a real or potential problem. With such a wealth of information, it will be easy to make real time changes to improve our overall interaction with electricity.

Power companies and electricians aren’t the only ones reaping the benefits of the Smart Grids. Consumers will be able to access a wealth of information about their electricity consumption and make changes as needed.

The days of trying to curb electricity usage by yourself will soon be a thing of the past. As smart meters become the industry standard, homeowners will be able to control how they use their electricity in a way that minimizes the impact it has on the environment and their wallets.

Smart grids bring peace of mind to consumers through careful regulation. A homeowner with a smart phone could control lights and appliances, such as the hot water heater, from the palm of his or her hand. A clothes dryer could be turned on when electricity demand—and rates—are at their lowest, or the air conditioner could cycle on and off based on peak electricity times.

Implementing Smart Grid technology at home also opens up the possibility of installing a charging outlet for an electrical car.

In a way, Smart Grid technologies almost sound like science fiction—but they aren’t. Companies are actively investing in and producing them. In 2014, projections indicate the U.S. smart grid industry will be worth a total of $42 billion, while world markets are expected to be around $171 billion.

This technology is revolutionizing how companies and people interact with electricity. These technological advancements are opening the door for consumers, and smart grid technologies are a big contributor. This is no longer science fiction—it’s reality.

Mr. Meyers is the recipient of the 2011 ESFI SAFE Award.
Cybersecurity Protects Today’s HPBs

Steve Molitor, Manager, NEMA High Performance Buildings Council

If a high performance building (HPB) is the body and the systems are the organs, then cybersecurity is the immune system that thwarts viruses and bacteria represented by cyber attacks. As our need for communication and information sharing grows, so do the openings for potential harm.

It seems that cybersecurity concerns are everywhere. Hacker groups make headlines with attempts and successes at infiltrating remote computers and systems, disrupting business, and causing economic—if not physical—harm to people and systems. According to FBI Director Robert Mueller, cyber attacks rival terrorism as a national security concern.¹

This is a natural result of the incorporation of computer systems and computer intelligence in nearly every aspect of our daily lives. It includes a growing number of systems used to monitor and control the operation of the utilities—lights, heating, air conditioning, and plumbing for example—in many of our commercial and residential buildings. It also includes computer intelligence built directly into components of those utilities, as well as an increasing number of appliances that are the end-users of the utilities such as clothes washers and dryers, light fixtures, temperature monitors, and many others.

The reason for the increase in intelligent systems and components is simple: energy efficiency hinges on knowing the usage and performance of all components of a smart building at any given moment as well as over time.

ROLE OF DATA
Without information, we can only guess at energy efficiency. With data, energy management systems can be an invaluable way to augment a building manager’s efforts to maximize occupant safety and comfort while minimizing the energy required to operate the facility.

Data also gives a smart building the ability to report its energy use. In the case of electrical systems, providing the grid with building systems data allows a utility provider to most efficiently send power where it is needed most, resulting in less burden on the infrastructure and, ultimately, lower rates.

It will also allow utilities to gauge more quickly where infrastructure improvements are needed to compensate for growing demand. Demand/response needs dictate that the high performance building has interfaces to the external world to exchange real-time and archived information. But every information pathway is a potential source of exploit where an attacker can seek to do real harm.

DEVISING A PLAN
Therefore, it is essential to protect systems within a building. Protection begins with a cybersecurity plan based on best practices tailored to the unique structure. A comprehensive audit should identify potential points of entry, potential targets, what will be monitored and by whom, and what actions would be taken when intrusions are detected in order to minimize potential risk or damage through rapid response.

Cybersecurity should be considered as a design parameter in any new construction or retrofit of existing buildings. Intelligent devices and systems change the landscape of design and add a new level of complexity to the process of design and construction. They also create new opportunities for exploit if they are not deployed in such a way as to minimize exposure to outside influence. Once installed, any new systems must be added to the cybersecurity plan.

Compliance with existing cybersecurity standards should be considered whenever they are applicable. The ISO 27000 series, NERC 1300, ISA-99 documents released through ANSI, and several NIST 800-series publications are examples of existing information security standards that are readily adaptable to systems used in HPBs. Some standards already contain valuable information about best practices that can be implemented immediately.

Congress is moving toward legislation that would impose cybersecurity standards on industry and services that are critical to our national infrastructure², but the effort should not end there. Cybersecurity in any enterprise, large or small, and critical or not by federal definition, is essential to “keeping the lights on” both literally and figuratively.

The impact of cyber attacks could cripple many businesses with devastating economic effect. The time is now to plan for those attacks and proactively implement measures to mitigate the risk. ③

¹ www.google.com/hostednews/afp/article/ALeqM5gIRfWz6-nqzxSvZ2tO_ErRqk9g?docId=CNG.6294276dd5f26542527b791472efef0c.c1
² www.homelandsecuritynewswire.com/srinfrastructure20120206-bill-would-allow-dhs-to-impose-cybersecurity-standards
³ www.homelandsecuritynewswire.com/srinfrastructure20120206-bill-would-allow-dhs-to-impose-cybersecurity-standards
NEMA and ASHRAE Collaboration Continues on FSGIM Standard

As reported in last April’s NEMA magazine, NEMA and the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) are developing a national facility smart grid information model (FSGIM) standard. Standard Project Committee 201P (SPC 201P), established by NEMA and ASHRAE, was commissioned to create an information model for smart building communication.

In working terms for the standard, a facility is defined as any structure that uses electricity, making the standard applicable to commercial, industrial, institutional, and residential buildings. The standard breaks down the electrical components inside the facility into four broad categories:

- load—any device or system that consumes electricity
- generator—any device or system that creates or saves electricity
- meter—any device or system that measures electrical consumption
- manager—any device or system that monitors or controls electrical loads and generators

The intent is to create a theoretical model of each piece of information that could be exchanged between devices in the four categories, plus information that must be exchanged with the external Smart Grid to optimize power distribution and use.

The model defines a comprehensive set of data objects and actions that support a wide range of energy management applications and electrical service provider interactions, including but not limited to:

- on-site generation
- demand response
- electrical storage
- peak demand management
- forward power usage estimation
- load shedding capability estimation
- end load monitoring (submetering)
- power quality of service monitoring
- utilization of historical energy consumption data
- direct load control

The information model defines the types of information to be exchanged and the values associated with each piece of information. It incorporates elements of IEC 61850 series and North American Energy Standards Board standards to ensure as much compatibility as possible with existing information models. When complete, the information will be compatible with a number of existing communications protocols including BACnet, Zigbee Smart Energy, session initiation protocol (SIP), and others.

Working groups were established to perform detailed analysis of the functions of devices in each category with respect to the energy management applications and interactions above. The working groups are now finalizing drafts of each modular section of the standard, which will be made available for first public comments in April.

Public review and comment is a major milestone toward the completion of the standard. The goal is to publish the standard in June 2012.
EVSE Section Supports LEED Proposal

Harry Massey, Industry Director

With the Obama administration’s goal of placing one million electric vehicles (EVs) on America’s roads by 2015, the Department of Energy (DOE) has announced projects to support community planning for plug-in EVs and electric vehicle supply equipment (EVSE) charging infrastructure.

This has prompted NEMA’s EVSE Section to support recommendations to the U.S. Green Building Council (USGBC) and its LEED (Leadership in Energy and Environmental Design) program to include EVSEs in its green building certification system.

The proposal encourages USGBC to add EVSEs back into LEED by:

• providing EVSE for three percent of full-time equivalent occupants, and
• encouraging EV-ready buildings that will facilitate the deployment of EVs by lowering installation and EVSE infrastructure costs.

NEMA and the section will work with others concerned about EVs and green buildings to support the addition of EVSEs to LEED.

With these NEMA-sponsored requirements, LEED will continue to redefine the way we think about the places where we live, work, and learn. As an internationally recognized mark of excellence, LEED provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

DOE funding recipients range from communities with extensive EV planning experience to those eager to begin. These projects will help communities address specific needs, which include updating permitting processes, revising codes, training municipal personnel, promoting public awareness, or developing incentives, all in support of LEED.

More than $8.5 million will be available through DOE’s Clean Cities initiative to facilitate local public-private partnerships that will develop EV deployment strategies. Each plan will be publicly available so that other stakeholders can learn best practices.

President Obama continued his commitment to EVs in his FY 2013 budget by proposing in January that the existing $7,500 tax credit for EVs be available to all consumers immediately at the point of sale and by investing $588 million for vehicle technologies at DOE—an increase of 80 percent.

For more information about the EVSE proposals and the EVSE Section, contact Harry Massey.
Historic Thayer Hotel Enters New Century

Anthony DiCarlo, Lutron MidAtlantic Account Sales Manager, Government

When Hudson River Partners 1, LP, acquired the historic Thayer Hotel in 1999, the majestic property had lost much of its stately appeal.

The property was originally established to accommodate personnel and guests of the U.S. Military Academy at West Point. Rick Minicozzi, managing general partner at Hudson river Partners, was determined to reestablish Thayer’s proper place as a world-class hotel and conference center.

Paying tribute to the hotel’s historical beauty was critical, but Mr. Minicozzi also understood the importance of twenty-first century amenities and sustainable operation. One major aspect of the renovation focused on efficient upgrades that reduce energy costs without compromising historic features or the overall guest experience.

**GUEST ROOM LIGHTING SAVES ENERGY**

Guest rooms are notorious energy hogs. Before room renovations, lights, televisions, and air conditioners were typically left on whether guests were in the room or not. Not only did this compromise the development’s group commitment to environmental responsibilities, but it played havoc with energy bills.

Now, lighting and TVs automatically respond to occupancy sensors.

“Wireless technology allowed us to install lighting controls in each guest room without rewiring,” said Mr. Minicozzi.

Wireless solutions made installation easy and operation automatic. When guests leave their rooms, lights turn off. Each television also responds to the sensor. Wireless bedside controls allow guests to adjust lighting right from the comfort of their bed, and again, no rewiring was necessary.

The HVAC system is linked by Ethernet to the front desk. When guests check in, they can adjust temperature controls to their own preferences. When they check out, air conditioning levels are automatically raised to ensure that energy is not spent heating or cooling an unoccupied room.

**EFFICIENT CONTROL SOLUTIONS THROUGHOUT**

The hotel is also home to the Thayer Leader Development Group, which provides leadership and ethics training.

Automatic shading systems, daylight and occupancy sensors, preset lighting control, and digital fluorescent ballasts help make the most of the facility’s location. Lutron shade controls in the conference facilities generate energy savings while ensuring that guests are never isolated from one of the hotel’s most impressive assets—its prime location on the grounds of West Point and the banks of the Hudson River.

Banks of floor-to-ceiling windows invite daylight into the space. Sensors allow electric light to be dimmed when daylight is sufficient. Blackout shades ensure maximum visibility during AV presentations. Shading and light control systems preserve the view while eliminating unpleasant glare and heat gain. Preset controls allow speakers to adjust lights and shades without disrupting their presentations.

These same strategies are also widely used in the bar and fitness center.

**RESULTS**

The owners already see a significant reduction in energy use. The seamless integration of the new controls has not been noticed by guests at all.

According to Minicozzi, “The setting is a major advantage for our conference center and a wonderful attraction for our guests. The entire hotel renovation was planned and executed to pay tribute to the hotel’s history and sustain its place as an iconic part of this venerable institution for the future.”

Mr. DiCarlo, a West Point graduate, focuses on lighting control solutions for historical and government products.
It’s one thing to gaze at a mountain range and marvel at its magnificence, but it’s another thing to put on your hiking boots and start climbing. Where do you start? Who do you partner with? What equipment do you need? How long will it take? How can you ensure you reach your destination?

Many feel the same way when they tackle mountainous eBusiness initiatives—overwhelmed. Yet, with customers demanding easier ways to do business, rich rewards await those companies who can scale the eBiz mountains.

Any company can purchase the latest and greatest technology, but that alone doesn’t equal success. Rather, excellence belongs to those who can prioritize, commit resources, take action, motivate change, and see tangible results. It’s a mysterious mix that only an elite few have mastered.

**VIEW FROM TOP**

To discover the keys to success, we approached the recent winners of IDEA’s Richard Buzun Award—Cooper Industries and Border States Electric (BSE).

The electrical industry’s top eBiz achievers are not only pioneers; they are also committed to sharing best practices. But they weren’t always on top. A decade ago, Cooper received just one electronic document interchange (EDI) transaction from eight partners. Likewise, just a few years ago, BSE staff was painstakingly piecing together product information for its catalog by scouring websites and calling manufacturers.

Now, after intense multi-year initiatives—and a lot of learning and collaborating with trading partners—both companies developed internal processes and standards, improved data synchronization with trading partners, and made significant strides in their eCommerce capabilities.

Cooper automated 17 EDI and EDIFACT (the international EDI standard developed under the United Nations) transactions with 550 trading partners, all integrated into its SAP business system, using EDIPro standards. Cooper also recently audited its product data with IDEA, boosting its clean, certified data in the Industry Data Warehouse (IDW) to more than 90 percent.

Likewise, BSE is approaching 100,000 items in its product information management (PIM) system, which can then be rendered out to various print or online catalogs. The company has worked with more than 100 manufacturers to automate the process of receiving up-to-date product information through IDW.

**GRASP THE BIG PICTURE**

So how did they do it? Both companies started by brainstorming. Cooper’s vision was to ramp up its eBiz initiatives to unite its divisions to operate as “one company—one face.”

“Before putting together an action plan, you’ve got to start at the very beginning: Why am I doing this? What are the ultimate customer needs? Understand your end game first. Then, once you know where you want to go, you can take a realistic assessment of where you’re at today and determine how to get from point A to Z,” said Scott Feldbush, director of Enterprise Business Systems Shared Services, Cooper Industries.

BSE envisioned a faster, more centralized way for staff to access product information internally as well as adding crucial product information to make ordering easier for customers.

“Don’t try to boil the ocean right away,” said Greg Thrall, senior vice president of operations and IT, BSE. “Establish consistency and then start building the base.”

Cooper initiated weekly conference calls to discuss the big picture, collaborate, and standardize processes.

“IT was key to have all the pieces of the puzzle in the beginning stages, not just IT, but also product development, marketing, and leadership,” said Samer Shehadeh, Cooper Industries EDI manager.

One of the best things Cooper discovered from collaboration was enhanced communication and cross-pollination of ideas.

“We’re leveraging good ideas better across the entire organization, which benefits our customers even more,” said Mr. Feldbush.

Lorraine Mott, project leader of electronic commerce for Cooper Crouse-Hinds, provided an example of how all the divisions worked together to make it easier to do business with the company.

“Now everything has the same look and feel: products on CooperIndustries.com, IDW downloads, even EDI mapping. As a result, customers who were doing EDI transactions with only one division, such as Crouse-Hinds, can now be brought live much more efficiently with other Cooper divisions,” Ms. Mott said.

BSE first set up a PIM system to centralize product data, then developed a content plan.

“Whether you are a manufacturer or distributor building content, start out
with an idea of what information you are looking for. For us, we’re looking for a name, description, features, image, manufacturer catalog page, and so forth. Determining key elements creates long-term consistency,” said Jason Archbold, BSE marketing catalog supervisor.

It’s also helpful to think of creating product content like writing a book.

“If there are too many authors and everyone is writing a different chapter, then when you put it together as a book, the need for consistency becomes pretty obvious,” said Todd Kadry, BSE marketing solutions manager.

**DETERMINE PRIORITIES**

It’s always a challenge to determine what to tackle first. Cooper’s Ms. Mott also recommends focusing efforts with manageable milestones.

“How do you eat an elephant? One bite at a time. We send a huge amount of product data to the IDW, but we tried not to look at how big it was. Instead, we broke it up into small chunks: let’s clean up this product group, then the next one. We concentrated on the products that customers absolutely needed to run their business first,” she said.

“Start small,” said BSE’s Mr. Thrall. “Begin building your most important ‘A items,’ then build out the other items in the same product families.”

It also helps to focus on output.

“It’s helpful to start with a small project, such as a mini-catalog, decide the handful of SKUs that you’re going to feature, build the content for those, and then see it through to a deliverable. It’s a visible win to leadership and customers,” said Mr. Kadry.

**INVOLVE CUSTOMERS**

Both companies have also discovered how important it is to involve customers.

“You really have to expand your vision on what you are trying to build and satisfy the customer needs,” said Mr. Thrall. “With our first catalog, we got the customer involved. We asked, ‘What do you want to see?’ and ‘How can we cut time out of the ordering process?’ The demand is out there.”

As a result, BSE has 14 different customer catalogs in the works. Customers are intimately involved in the catalog product selection process, which brings a whole new level of interaction and visibility to the customer relationship.

Likewise, a well-timed conversation with customers can save time and headache. When one customer requested punch-out ordering and BSE’s technical staff got involved, they discovered the customer’s system didn’t have the capability. What it really needed was a flat file that could be uploaded with pricing, delivery, and descriptions.

“If we hadn’t sent the right people to the meeting, we would be down a path designing a system that wouldn’t work. As a result of asking the right questions, we were able to turnaround our customer’s request with a faster solution,” said Mr. Thrall.

Cooper has also discovered the value in partnering technical and sales staff on visits to customers.

“By including people who understand both the technical and business process, it helps ensure that we are in sync with our partners on the capabilities that we provide. That connection then leads to future conversations, tightening up the relationship from a technical standpoint, and driving toward realistic solutions,” said Mr. Feldbush.

**COMMIT, COMMUNICATE, INNOVATE**

Another key to each company’s long-term eBiz success was committing to the goal, measuring efforts, and communicating with leadership.

“Our leadership was supportive, but we still presented our vision, communicated our current status, and provided a competitive cost and trend analysis,” said Mr. Feldbush. “Our upper management team looked at the landscape and understood what resources we needed.”

BSE’s staff also recognizes that every project is part of a larger journey.

“I don’t think you can overstate that it takes commitment, executive level involvement, and support; this isn’t instant gratification,” said Mr. Kadry.

Even though Cooper and BSE reached the top of one eBiz mountain, they know that they must continue to innovate to climb those still on the horizon.

“We’re always looking at ways to make it easier for customers to do business with us,” said Mr. Feldbush.

“Improving eBusiness is an ongoing effort; you’re never really done,” said Mr. Archbold. “But once the data is populated well, it’s an asset and a really powerful tool.”

Sonia Coleman is a digital marketing strategist.

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**Jumpstart eBusiness Initiatives**

Register for IDEA’s new webinar series that covers:

- populating and standardizing marketing content
- enhancing productivity with the next generation of data synchronization
- increasing sales with richly-populated web storefronts
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Register at www.idea-esolutions.com/webinars.

Also, the 14th Annual IDEA E-Biz Forum, “Reunite. Rethink. Recharge,” will be held September 25–27 in Dallas, Texas. Stay current and nominate your company for the 2012 Richard Buzun Award for Leadership and Innovation in eCommerce at www.idea-ebizforum.com. ©
Board of Governors Welcomes Senator Bingaman and Former Homeland Security Secretary Chertoff at Quarterly Meeting

The NEMA Board of Governors heard comments from Senator Jeff Bingaman (D-NM) and former Secretary of Homeland Security Michael Chertoff at its March 14–15 meeting in Washington, D.C.

Introduced by Chairman Dominic J. Pileggi as “our industry’s best friend on The Hill,” Sen. Bingaman used the opportunity to discuss energy, energy legislation, and forecasts of probable versus doable legislation in Congress. He also took time to speak one-on-one with individual members about the value NEMA can offer Congress by providing education, expertise, and industry consensus positions.

Mr. Chertoff briefed the NEMA board and members of NEMA’s medical division on the issues, perimeters, and growing threats associated with cybersecurity. The event gave NEMA leaders a better understanding and focus on future strategies to counter unwanted cyber invasion.
Solar Lanterns—Saving Lives and Being Green

In the U.S., energy policy debate takes place every day. But simply becoming electrified is still the focus for much of the world.

Estimates vary, but approximately one fourth of the world’s population lives off the grid—primarily in South Asia and sub-Saharan Africa. Much of this population relies on petroleum-consuming devices, primarily kerosene lamps, to provide light after the sun goes down.

Aside from being a very dirty source of light, emitting 200 billion kilograms of carbon dioxide per year, these lamps pose a serious health risk. Entire families are exposed to long periods of poor air quality, for instance, when they are used by children studying. It is also all too common for open-flame lamps to be knocked over, causing unnecessary loss of life and property.

Greenlight Planet is one of a handful of companies offering off-grid lighting solutions to remedy these problems. Its Sun King series of solar-powered lanterns, for example, is a “brilliant” idea, but one that comes with many design and marketing challenges because of the rural and poverty-stricken areas where it is intended for use.

The Sun King uses LED (light-emitting diode) bulbs that increase efficiency and lifetime, eliminating the need to keep replacement bulbs on hand. The lamp is housed in an especially durable polycarbonate/acrylonitrile butadiene styrene (ABS) housing that provides resistance to water, dust, and physical stress. This makes it likely that villagers will only need to purchase one device that will last for many years.

The lamp connects via detachable cord to a solar photovoltaic module and after charging during the daytime, provides up to 15 hours of 44 lumen light or six hours of 110 lumen light. Energy collected from the solar cell is stored in a lithium-ion battery using lithium iron phosphate cathodes.

The battery technology used in the product drastically extends the lifetime of the battery over more conventional lead-acid and nickel-cadmium battery chemistries by providing more charge cycles. Ultimately, this is what makes the purchase of the lantern cost effective.

In addition to providing light, the product includes common cell phone adaptors. These enable communication, especially cell phone-based banking and commerce, which is rapidly emerging in remote areas.

“All the effort of engineering would be for naught if the lanterns were not being sold,” said Greenlight Planet founder Patrick Walsh.

The company employs a unique and personal marketing strategy: it recruits and trains villagers to become direct sales agents in their home communities. Once trained, villagers educate consumers on the benefits of replacing traditional kerosene lamps with modern LED lighting. Nearly 1,000 of these saathis, or partners, are now changing their neighbors’ lives as well as generating additional income for their own families.

More information about Greenlight Planet can be found at www.greenlightplanet.com.

Ryan Franks, Program Manager | ryan.franks@nema.org
ESFI Takes Action against Counterfeit Electrical Products
Seeking Visionary Industry Leaders to Participate

Brett Brenner, President, ESFI

Product counterfeiting is plaguing the electrical industry.

When the word “counterfeit” is heard, it is usually associated with seemingly harmless items, such as footwear, clothing, and accessories. Although not as commonly known, electrical product counterfeiting is extremely prevalent. A recent report released jointly by U.S. Customs and Border Protection and U.S. Immigration and Customs Enforcement states that consumer electronics and devices were the top commodity seized in 2011, with the value increasing by 16 percent over 2010.

Counterfeit electrical products can be difficult to identify, even for those within the electrical industry. Unsubstantiated products could be a knock-off version of a name-brand item, one that bears an unauthorized certification mark, or a product that displays visible defects. These illicit, substandard products not only cost the electrical industry millions of dollars each year, they also pose a serious threat to consumers by being dangerous and, in some cases, deadly.

The severity and magnitude of this problem necessitate immediate action.

The Electrical Safety Foundation International (ESFI) is spearheading the fight against this growing epidemic and is enlisting the support of industry stakeholders to help champion this important cause with Operation: ACT.

The campaign is ESFI’s groundbreaking anti-counterfeiting initiative. It focuses on the health and safety concerns related to counterfeit electrical products by drawing the correlation between genuine products, safety, and reliability. It will educate and inform customers in the electrical supply chain about the dangers and prevalence of counterfeit electrical devices, while insulating individual brands and marks from being negatively associated with these unsafe products.

The campaign will have a global reach, achieved through the cultivation of relationships with international partners, including law enforcement, industry, and government stakeholders. Supporters of this multifaceted, three-year awareness campaign will protect the electrical industry while positioning themselves as leading advocates for safety.

Operation: ACT cannot succeed without the financial commitment of the electrical industry’s most influential and visionary leaders. Your company has the unique opportunity to join this important crusade to not only protect the industry, but to save lives.

United in our efforts, the electrical industry can successfully combat the growing menace of counterfeit electrical products worldwide.

Founded in 1994 as a joint venture by NEMA, the U.S. Consumer Product Safety Commission, and Underwriters Laboratories, ESFI is a vehicle for promoting electrical safety across North America through education, awareness, and advocacy. With a true international presence and vast experience in deploying effective safety awareness programs, ESFI is well-equipped to lead the charge in the battle against counterfeit electrical products.

Detailed information about Operation: ACT’s strategy, program objectives, and benefits can be found at www.esfi.org/OperationACT.

Osram Sylvania Lights up National Mall

On January 30, Osram Sylvania, in partnership with the National Park Service, the Trust for the National Mall, and Pepco (the electric utility that serves Washington, D.C.), lit up the National Mall with 174 D6 Area Lighting LED Retrofit Kits. Secretary of the Interior Ken Salazar and Secretary of Energy Steven Chu flipped the switch that will reduce lighting energy use on the National Mall by up to 65 percent.

The light given off by the previous mix of HIDs and CFLs had wide color discrepancy, creating a splotchy and mismatched appearance. The retrofit of existing system will increase energy efficiency and reduce maintenance costs while increasing brightness and safety.

“We are honored to light our nation’s front lawn with innovative and cutting-edge LED technology developed and assembled here on U.S. soil,” said Rick Leaman, president and CEO, Osram Sylvania.

Photo courtesy Osram Sylvania
CMS Covers CT Colonography, Saves Lives

New data from the ACRIN trial, the largest study to date examining the efficacy of computed tomographic colonography (CTC), proves that “virtual colonoscopy” is comparably effective to standard colonoscopy in detecting colorectal cancer and precancerous polyps in Medicare beneficiaries.

Published online in *Radiology*, the study found CTC is comparable to conventional optical colonography for Americans ages 65 years and older and is consistent with data from similar studies. In light of new data, combined with the findings of the landmark 2008 CTC trial, Medicare should expand seniors’ access to this lifesaving screening tool by reimbursing physicians for CTC exams.

CMS has indicated it was waiting for data proving CTC is as effective as traditional colonoscopy for Medicare beneficiaries. Now that there is definitive proof that a virtual colonoscopy is as effective as the optical exam for Medicare beneficiaries and that it reduces barriers to colorectal cancer screenings, CMS should open a national coverage decision for CTC.

MITA supports the American College of Radiology’s request for CMS to open a CTC national coverage decision.

The Centers for Disease Control and Prevention (CDC) estimates that up to 30,000 colorectal cancer deaths each year could be prevented if all those aged 50 and older were screened regularly.

Colorectal cancer is the third most frequently diagnosed cancer and the second leading cause of cancer death in both men and women in the U.S., despite having a 90 percent cure rate when detected early. Moreover, data have found that African Americans are far less likely to get colonoscopies than other populations and have a 48 percent higher mortality rate from colon cancer than white Americans.

Evidence from the National Naval Medical Center in Bethesda, Maryland, demonstrates that access to CTC raises screening levels. According to Brooks Cash, MD, Integrated Chief of Medicine and Staff Gastroenterologist at the National Naval Medical Center/Walter Reed Army Medical Center, when given the option, 40 percent of patients chose to undergo virtual colonoscopy. Moreover, 37 percent of patients who underwent colon cancer screening said they would not have been screened without virtual colonoscopy.

A similar effect has been seen at the University of Wisconsin, where overall screening rates for colorectal cancer have more than doubled per quarter over a five-year period, following the introduction of virtual colonoscopy as an additional screening option.

The American Cancer Society recommends CT colonography as a screening test. The Blue Cross Blue Shield Association Technology Evaluation Center named CTC an effective screening tool. CIGNA, United Healthcare, Anthem Blue Cross Blue Shield, and other insurers all cover virtual colonoscopy. Even President Obama chose a CTC over a traditional colonoscopy for his colorectal cancer screening exam two years ago.

CT colonography uses high-tech, lose-dose X-rays to produce three-dimensional images of the colon. CTC is far less invasive than the optical exam and does not require sedation.

The ACRIN trial is the largest multicenter study to compare accuracy of CT colonography to conventional colonoscopy in patients 50 years of age and older. The National CT Colonography Trial recruited 2,600 participants ages 50 and over from 15 U.S. medical centers. The secondary analysis of the 65 years of age and over cohort compared data of 477 study participants.

Gail M. Rodriguez, PhD, Executive Director of MITA and Vice President of NEMA | gr Rodriguez@medicalimaging.org

Get the Low Down on New York City Lighting Mandates

Attend NEMA’s presentation at the TFM Forum in New York City, April 17, 11 a.m., if you have an interest in New York City lighting renovation opportunities.

Seats are limited. Contact Erik.Sorenson@nema.org to reserve your spot today.
Welcoming New Members

The NEMA Board of Governors has approved the following members:

**REGULAR MEMBERSHIP**

- **Applied Information, Inc.**
  www.appinfoinc.com
  Transportation Management Systems & Associated Control Devices (03TS)

- **Bioscan, Inc.**
  www.bioscan.com
  Molecular Imaging (09MO)

- **Bison ProFab Inc.**
  www.bisonprofab.com
  Transportation Management Systems & Associated Control Devices (03TS), Enclosures (05EN)

- **en-Gauge Inc.**
  engaugeinc.net
  Signaling Protection & Communication (03SB), Health Care Communications & Emergency Call Systems Group (03SB-2)

- **HSI Fire & Safety Group**
  www.homesafeguard.com
  Signaling Protection & Communication (03SB)

- **John Thomas, Inc.**
  www.crashcushions.com
  Transportation Management Systems & Associated Control Devices (03TS)

**ASSOCIATE MEMBERSHIP**

- **Budde Marketing Systems, Inc.**
  www.buddemarketing.com

Global Transportation and Logistics Addresses NMFC Issues

NEMA’s Global Transportation and Logistics Committee is developing an industry response to National Motor Freight Classification (NMFC) issues concerning Package 2345. NMFC is a standard of the National Motor Freight Traffic Association (NMFTA). It provides a comparison of commodities moving in interstate, intrastate, and foreign commerce.

The proposed classification provision calls for disallowing use of skid runners; requirements for use of lift truck skids or pallets; and removal of reference to “standoff” pads.

The use of lift truck skids or pallets requires that:

- articles be bolted to stringers and banded to deck;
- they extend not less than six inches beyond side of article; and
- top-heavy articles be on double-faced pallets.

Erin Topper and Joel Ringer of NMFTA requested input on issues related to cable-in-conduit. NMFTA established a research project and survey requesting information from the cable/wire and tubing/conduit industries in an effort to determine transportation characteristics.

Small Business Council Forum—Increasing Profitability in Small Businesses

NEMA’s Small Business Council will focus on profitability at its summer forum June 12 in Alexandria, Virginia.

Although focused on small businesses, *Increasing Profitability in Small Businesses* also applies to small units or divisions within large companies. The agenda includes:

- An economic update tailored for small business by Don Leavens, NEMA vice president and chief economist, and Tim Gill, director, economics. NEMA’s economic forecasting team recently topped the *Wall Street Journal*’s economic forecasting survey.
- Speakers from Department of Commerce, Department of State, and the Export/Import Bank will emphasize international opportunities.
- Tom Fazekas, an industry expert, will present “Using Lean Six Sigma to Grow Your Bottom Line.”

For more information, or to register, contact Shlyneice.Davis@nema.org (703-841-3257) by May 15.
› Remembering the Legacy of Bill Boehm

Everyone knew that Bill Boehm was a good man. But when it came to NEMA, he was an icon.

Beyond being an absolute leader in the sections that dealt with his industry, Bill was instrumental as a founder and original contributor of ESFI, which was established exclusively as a consumer-oriented organization.

Bill also started and drove the NEMA PAC. For many years, he was the catalyst and drive behind getting members to support business-friendly legislators.

Personally, I was most affected by his heritage and willingness to mentor me and tell me stories going back 50 years about the longest serving members, like himself and Harold Leviton. In my last conversation with Bill, he told me he had not missed a single annual meeting in 53 years.

Our board meetings won’t be the same without him.

Evan R. Gaddis, NEMA President & CEO

[Image of William Boehm]

› Arc Welding Section Recognizes Wayne Hoffman

On January 31, John Miller, Industry Director for the 1EW Arc Welding Section, presented Wayne Hoffman of ESAB Welding and Cutting Products with a lifetime achievement award from the section.

Mr. Hoffman has worked in the welding industry since 1960 in various roles including an engineer, an engineering manager, and a general manager. With experience in utility-powered converters and power sources as well as engine-driven power sources, he has been a significant contributor to 1EW.

As an early advocate and champion for harmonized standards, he has participated solidly in the IEC as a delegate and expert to TC26. Over the decades, Mr. Hoffman has been involved in various section committees and has provided wisdom, friendly guidance, and mentorship.

He has traveled to many parts of the world representing ESAB and NEMA’s Arc Welding Section. Today, his pioneering work in the arc welding industry has established an ease in commerce from continent to continent via harmonized standards.

John Miller, Industry Manager | john.miller@nema.org

› Correction

The image of this motor in the January issue of ei appeared courtesy of Genteq.

Send section news to comm@nema.org
ARPA-E Summit Brings Vanguard Technologies to Washington

The third annual Department of Energy Advanced Research Projects Agency (ARPA-E) Energy Innovation Summit took place in February near Washington, D.C. Nearly 2,500 attendees from industry, academia, investment firms, and government came together for what was an impressive and high-profile program.

ARPA-E is modeled after its Department of Defense counterpart DARPA. It serves to fund high-risk energy and clean technology research that might otherwise go unrealized while supporting American ingenuity to solve the nation’s energy problems. The agency provides funding for game-changing ideas including grid-scale storage, power electronics, electric vehicle batteries, building efficiency, advanced carbon capture, and electrofuels.

ARPA-E also champions projects that it is unable to support financially, but which still hold great promise. The ultimate message from ARPA-E Director Arun Majumdar and Secretary of Energy Steven Chu to the entrepreneurs and scientists was simple: Keep the ideas coming, America needs you.

With keynotes by Energy Secretary Steven Chu, Senate Energy Committee Chairman Jeff Bingaman (D-NM), Senate Energy and Water Appropriations Committee Chairman Lamar Alexander (R-TN), Microsoft Chairman Bill Gates, and former President Bill Clinton, thousands—including a handful of NEMA staff—gathered to network and discuss the future of energy innovation.

Mr. Gates best reinforced the attendees’ communal desire for success. “This is a very complex set of technologies, and so we need literally thousands of companies trying these things to increase the odds that we will have the ten or twenty approaches that will get us to the magic solution,” he said.

Other speakers included MIT President Susan Hockfield, Deputy Secretary of Defense Ashton Carter, former Wal-Mart CEO Lee Scott, FedEx CEO Fred Smith, and Xerox CEO Ursula Burns.

The real stars of the summit were seen in the Technology Showcase, which featured 240 groundbreaking developments from ARPA-E awardees and other innovators.

According to Secretary Chu, “Whether they are developing fuels from electricity, capturing and storing carbon, or finding new ways to generate energy from the sun and wind, the projects highlighted through the summit are helping to push the boundaries of technology and build an American economy that lasts.”

Director Majumdar’s closing remarks revealed a $150 million ARPA-E open Funding Opportunity Announcement “to support transformational research in all areas of energy R&D,” which positions next year’s event to be even better.

Ryan Franks, Program Manager
ryan.franks@nema.org

ARPA-E Focuses on High-Risk Energy Technologies

ARPA-E is designed to invest in—and attract private capital to—high-risk, transformational energy technologies. A number of its programs are particularly relevant to the electroindustry:

- **ADEPT (Agile Delivery of Electrical Power Technology)**
- **Paving the way for more energy-efficient power conversion and advancing the basic building blocks of power conversion: circuits, transistors, inductors, transformers, and capacitors**
- **BEESE (Batteries for Electrical Energy Storage in Transportation)**
- **Exploiting a variety of potential solutions including radical improvement of today’s lithium-ion technologies, designs using other metals such as magnesium, sodium, and zinc, and new ways of using lithium in lithium-sulfur and lithium-air batteries**
- **GRIDS (Grid-Scale Rampable Intermittent Dispatchable Storage)**
- **Developing storage technologies that can store renewable energy for use at any location on the grid at an investment cost less than $100 per kilowatt hour**
- **REACT (Rare Earth Alternatives in Critical Technologies)**
- **Identifying low-cost and abundant replacement materials for rare earths while encouraging existing technologies to use them more efficiently**

ARPA-E was created in the America COMPETES Act in 2007, a bill supported by NEMA and one on which it conducted some lobbying efforts. ARPA-E received its first funding through the American Recovery and Reinvestment Act. In FY2012, it received $275 million, a significant increase over FY2011 when most agencies saw substantial budget cuts—a clear sign of the agency’s bipartisan and bicameral support.

President Obama has requested $350 million more for ARPA-E in FY2013. NEMA is encouraging Congress to provide ARPA-E with its full budget request.

In earlier ARPA-E projects, NEMA members were awardees of about $80 million.

Under the leadership of its first and only director, Arun Majumdar, ARPA-E has quickly become a key part of the energy conversation. With Dr. Majumdar’s recent nomination as U.S. Under Secretary of Energy, ARPA-E is likely to name a new director soon.

For more information, visit http://arpa-e.energy.gov/©

Jim Creevy, Director of Government Relations
jim.creevy@nema.org
In 2012, NEMA’s Board of Governors approved the High Performance Buildings (HPB) Strategic Initiative and opened the HPB Council (HPB) to all members at no charge. HPB had already laid the foundation for the initiative with its pioneering work in understanding which applicable codes and standards were gaining traction in the marketplace and could have an impact on members’ business.

This work showed that NEMA members should get involved early, not only for promoting new technologies and products but also for defending against threats that could have major consequences for their businesses.

The following story exemplifies this concern.

In late 2011, the International Code Council (ICC) conducted final action hearings in Phoenix, Arizona, on two new codes: the International Pool and Spa Code and the International Green Construction Code (IgCC).

While both documents had been developed as drafts, the HPB’s Codes and Standards Review Task Force (CSR TF) was quite involved with IgCC for a few reasons. One reason was because the code was new and, as such, offered a better chance to be changed should the need arise. The other reason was to avoid establishing precedents that would be harder to fight once in place.

**ESTABLISHING MINIMUM GUARANTEED SERVICE LIFE**

One item of intense interest was a section that would establish minimum guaranteed service life for buildings and their major components, including electrical systems and products. For all electrical products used in a compliant building, the requirement would have been tantamount to a mandatory product life guarantee. The code language was also confusing in that it alternated service life with design life. This could, in principle, toughen the requirements.

NEMA submitted a proposal, developed through HPB with support from all product sections involved, to strike “electrical” from the list of building components requiring a 25-year design life. The rationale included the fact that most electrical products have never been evaluated for that type of performance. Many electrical products are evaluated for operational life performance. For example, operational life performance can be measured by the number of operations for switches and circuit breakers or operating hours for lamps and smoke detectors.

NEMA members and field representatives also argued these points during public hearings in Dallas, Texas, in May 2011. Nevertheless, NEMA’s proposal was disapproved by the IgCC committee with the brief statement that electrical systems are important components of a building and should be required to have a minimum service life.

For the final code hearings, NEMA followed up its initial proposal with written comments detailing why a 25-year service life is not practical for electrical components. Other industries with whom NEMA had communicated with in preparation for this event also weighed in. Most opposed the concept of service life for buildings and systems entirely.

After lengthy discussion, IgCC voted to overturn the committee action from November and remove the requirement altogether. The building service life remained in the code, however, but only as a project elective category left to the owner’s and designer’s determination.

While service life was the most significant and sweeping item of concern to NEMA members, there were other issues on which the association commented. For our first foray into this new coding environment, NEMA was quite successful. About 24 of the original 35 NEMA proposals were accepted directly or indirectly.

We learned a great deal about the process. By its participation, NEMA had a significant impact and established itself as an important player in the ICC process. The main lesson NEMA members should retain is that what you don’t know could hurt you.

HPBC CSR TF members invite other NEMA sections to join its effort. The work to review the recently approved IgCC and the energy-related International Energy Efficiency Code has already started. Comments for the new cycle are due by January 2013. More information can be found at www.iccsafe.org/cs/IGCC/Pages/PublicVersionDevelopment.aspx.

...the requirement would have been tantamount to a mandatory product life guarantee.

The task force has also targeted other potentially relevant documents, including several ASHRAE standards that are gaining serious traction in the marketplace (90.1, 90.2, 108.1, 100, California Code of Regulations titles 20 and 24, and others). These documents could be perceived as posing potential threats to NEMA members, but they are also opportunities to promote new technologies and products.

This is where the experience of every related NEMA section could make a difference.

Joe Andre, Field Representative | joe.andre@nema.org

Andrei Moldoveanu, Technical Director | and_moldoveanu@nema.org
Whitepaper Documents Requirements for Receptacles in Wet Locations

Last summer, we reported on the adoption of new requirements in Sections 590.4(D) and 406.9(B)(1) of the 2011 National Electrical Code® (NEC) for a new class of “extra-duty” outlet box hoods, sometimes referred to as “weatherproof while-in-use covers.”

This class and related requirements were the result of a proposal from NEMA. New NEC requirements address reports from NEMA field representatives and their discussions in the electrical inspection community on the general lack of durability of outlet box hoods that are most often a component of the required weatherproof enclosure for 15- and 20-ampere, 125- and 250-volt receptacles installed in wet locations. The requirements for “extra-duty” outlet box hoods apply to temporary installations, high-traffic public areas, and other places where these products are most susceptible to damage.

In concert with the updated NEC, new durability performance testing and marking requirements were adopted in UL 514D Flush Device Coverplates to establish necessary listing requirements for “extra-duty” outlet box hoods. NEMA members went one step further in proposing additional performance requirements in a future edition of UL 514D for all outlet box hoods to improve general durability even in less severe application environments.

In order to document this evolution in receptacle protection requirements for wet location installations, the NEMA Outlet and Switch Box Section recently published Protection of Receptacle Outlets in Wet Locations According to the National Electrical Code® to summarize relevant code changes for these installations and the drivers behind them.

The paper documents inspection community concerns about the effectiveness of sealing a flush-mounted weatherproof enclosure at its interface with a finished building surface. Because of the many variables in existing building finishes, there unfortunately is no finite set of solutions that will address all of these concerns.

According to Steve Blais, chairman of the NEMA Outlet and Switch Box Section Technical Committee, this paper will be a valuable resource for our industry.

“Inspector and installer education on critical matters of safety is ongoing, including the subject of receptacle protection. The ability to cite or download information like this from an industry as opposed to an individual manufacturer’s perspective is invaluable when interacting with customers and inspectors in the field,” Mr. Blais said.

Protection of Receptacle Outlets in Wet Locations According to the National Electrical Code® can be downloaded at no charge at www.nema.org/WetLocations.

Mike Leibowitz, Program Manager | mike.leibowitz@nema.org

State of Idaho: Electrical Code Adoption Effectively Killed

What appeared to be a positive move by the Idaho Electrical Board last August has turned into a dead end.

At that meeting, after taking testimony from several individuals, the board voted to forward a recommendation to the legislature to adopt the 2011 National Electrical Code® (NEC) without amendment. There was a proposal to send two recommendations, one for full adoption and one deleting the expanded requirements for arc-fault circuit interrupters (AFCI) protection. The intent was to give the elected officials the option of selecting either one. The second option was rejected because the board did not want to appear unsupportive of AFCI protection.

On January 31, 2012, the Idaho House Business Committee took up the adoption of the 2011 NEC. Previously, subcommittees from both the Idaho House and Senate took testimony on the proposed adoption, and both voted to reject the new electrical code. Because the subcommittees had only the single proposal, it was faced with either accepting or rejecting it in its entirety.

With testimony in opposition from several contractors that grossly exaggerated the financial impact of expanded AFCI protection, as well as stories of “nuisance tripping,” the subcommittees turned down the entire code. The primary testimony was from several electrical contractors and a few homebuilders.

At the full business committee hearing, the chairman asked for the recommendation of the subcommittee and the reason for that recommendation, immediately calling for a vote. There were several individuals in attendance that had signed up to testify on the issue—mostly in favor of adoption—but were not given the opportunity to be heard. The vote was overwhelming to reject the board’s recommendation.

While it is still possible for the full legislature to adopt the 2011 NEC, the reality is that it is a dead issue for at least another year. The board can take this up again later in 2012, but the opposition to arc-fault protection will likely not lessen.

In the meantime, Idaho will be without all the additional benefits and safeguards embodied in the latest and most current electrical code available.

Joe Andre, Field Representative | joe.andre@nema.org
IEC TC 23 Strategic Plan Addresses Issues of Responsible Standards

Dennis Oddsen, Director of Engineering, Hubbell Inc.

With adoption of the IEC Technical Committee (TC) 23 Electrical Accessories Strategic Business Plan (SBP) in September 2011 by the Standardization Management Board (SMB), TC 23 has committed to addressing the needs of significant markets in accordance with the IEC philosophy.

That philosophy states that projecting one solution that accommodates one market (but not others) as the international standard will not force markets to evolve and coalesce. Instead, markets and their related industries will look elsewhere for standards that better accommodate their needs, resulting in a loss of IEC relevance.

While Subcommittees (SC) 23B Plugs, socket-outlets and switches, and 23H Industrial plugs and socket-outlets, are specifically referenced in SBP, it is clear that the principle of ensuring that IEC standards do not address one solution for one market while failing to address solutions for other significant markets applies to any SC or TC.

The new TC 23 SBP responds to SMB decision 136/6, which requested TC 23 to develop a plan to address concerns from the IEC U.S. National Committee and other countries regarding standards that do not reflect the needs of significant markets. TC 23 set a three-to-five-year objective to publish globally relevant standards, with the expressed goal that they meet basic IEC safety standards.

TC 23 SBP points out that it may be helpful to identify differences between existing and proposed alternative solutions and to categorize these differences as “permanent” or “temporary.” TC 23 Maintenance Team (MT) 61916 has been given the task of defining these terms. MT 61916 has also been tasked with analyzing IEC basic safety standards and determining which are relevant to TC 23 standards and what the appropriate parameters would be.

While MT 61916 will determine the most appropriate tools, SBP makes clear that this work is not intended to delay the submittal of proposals from the U.S. or other countries.

It is now the responsibility of the U.S. to develop responsible proposals to address the needs of U.S. and related markets.

Mr. Oddsen is a member of IEC TC 23, MT 61916.

Is your electrical safety program effective?

HOW DO YOU KNOW?

Are you prepared to deal with the consequences of an electrical tragedy in your workplace? Take the Electrical Safety Foundation International’s (ESFI) FREE electrical safety self-assessment before it’s too late. Visit ESFI’s website for our assessment tool and a variety of additional free resources aimed at preventing electrical fires, injuries, and fatalities.

ww.electrical-safety.org
Green Buildings Offer Growing Business Opportunities in Asia Pacific Region

The interest in green buildings in the Asia Pacific region is at an all-time high, including among heads of state.

Because buildings generally represent a third of the energy usage in any country, improvements in building energy efficiency have the potential to significantly reduce costs and environmental impacts. While there is no clear definition of what is a “green building,” and ratings and labels can be subjective, energy use can be evaluated in financial terms.

Last year, two significant events involving green buildings and green growth took place in the region. One involved the role of standards and trade; the other concentrated on encouraging a positive green building climate.

ROLE OF STANDARDS AND TRADE
APEC, the Asia Pacific Economic Cooperation, consists of 21 different countries (called economies): Australia, Brunei, Canada, Chile, Chinese Taipei, Hong Kong, China, Indonesia, Japan, Malaysia, Mexico, New Zealand, Papua New Guinea, People’s Republic of China, Peru, Philippines, Republic of Korea, Russia, Singapore, Thailand, United States, and Vietnam.

In 2011, NEMA member companies exported nearly $28 billion worth of products to APEC, one of the most promising growth markets in the world for the next ten years or more.

NEMA collaborated with several entities on Green Buildings and Green Growth: Enabling Role of Standards and Trade. It featured speakers from public and private organizations including standards development organizations, trade associations, professional societies, code officials, environment officials, and manufacturing companies.

The two-day conference was organized around sustainable buildings; building codes; managing environmental attributes of sustainable building materials in codes and standards; performance targets and rating systems for sustainable buildings; case studies; and the future of green buildings.

GREEN BUILDING CLIMATE
A second conference, Green Buildings and Green Growth: Approaches to Encouraging a Positive Green Building Climate, was organized by APEC and ASEAN, the Association of Southeast Asian Nations, which consists of Brunei, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

Participants reviewed standards, codes, regulations, and conformance practices in place and under development in order to enable a greater understanding of their roles in the broader landscape of sustainability and conservation in commercial buildings, enable sustainable economic growth, and facilitate trade and investment across the Asia-Pacific region.

The focus was to increase participation in development of codes and standards that support more efficient, better aligned policies and to facilitate trade and investment; enable greater consistency in evaluation of products and costs by sharing information, including methods of measuring claims; and build communication networks across key stakeholders and relevant experts in the region.

AREAS FOR COLLABORATION
Participants in both workshops identified numerous areas for collaboration:

- Engage policymakers to promote understanding that standards and conformance infrastructure provide the essential tools to enable achievement of green growth.
- Participation in standards development and engagement of key stakeholders is essential in developing standards and conformance infrastructure, and building an understanding on how they can be used to advance green buildings.
- In the development and adoption of mandatory codes and regulations, the use of transparent, evidenced-based analysis and stakeholder consultations as the basis for decision making is paramount to ensuring efficient and effective green building programs.
- Greater consistency and precision in the use of existing terms and definitions in green building schemes and programs is needed.
- Redundant or conflicting standards can cause manufacturers to reengineer products for different markets; collaboration on common tools for assessing and benchmarking green buildings, including models for lifecycle analysis, can avoid unnecessary costs and increase availability of green products in support of green building needs.
- Cooperation, including reference to international systems of conformity assessment, on methods and best practices related to conformity assessment can result in more consistent assessment and enforcement of building ratings.
- Continued collaboration in APEC, ASEAN, and international organizations to develop tools and best practices on standards, codes, and conformity assessment practices in support of advancing green buildings.

With attention assured at the highest levels, NEMA members are ideally suited to launch aggressive business plans that capitalize on growing opportunities. NEMA contacts with standards and regulatory officials serve as a good foundation to pursue market acceptance of members’ world-class products.

Gene Eckhart, Senior Director for International Operations | gen_eckhart@nema.org
WTO Appellate Body Affirms 2011 Ruling Condemning China’s Export Restrictions

On January 30, 2012, the appellate body of the World Trade Organization (WTO) upheld a July 2011 panel report that China's export duties and export quotas violated either China's commitments under its WTO Accession Protocol or the 1994 General Agreement on Tariffs and Trade (GATT) with respect to certain forms of bauxite, coke, fluorspar, magnesium, manganese, silicon carbide, silicon metal, yellow phosphorous, and zinc used in steel, aluminum, and chemicals.

This ruling was the result of complaints filed by the U.S., Mexico, and the European Union (EU) with the WTO in November 2009. In a press release, U.S. Trade Representative Ambassador Ron Kirk declared the appellate body's report "a tremendous victory for the United States—particularly its manufacturers and workers."

The appellate body rejected China’s efforts to dismiss the case because some parts of the legal measures challenged by the U.S., Mexico, and EU expired at the end of 2009. It found that China had enacted “a series of measures” that had expired at the end of 2009 and were supplanted by a newer set of rates and amounts were part of the same series of measures and still reviewable by WTO. These measures included framework legislation and implementing regulation that had not expired.

The appellate body also rejected China’s claim that certain defenses recognized by the General Agreement on Tariffs and Trade (GATT)1 applied to its export duties on certain raw materials. In its WTO Accession Protocol, China agreed not to impose export duties except to a list of 86 specific products that were listed in that agreement and none of the raw materials in this case were on that list. The appellate body affirmed that GATT defenses are not applicable to China’s WTO Accession Protocol commitment to eliminate export duties except with respect to 86 specific products.

CHINA’S CONDUCT INCONSISTENT WITH GATT

As applied to China’s export quotas on these raw materials, the appellate body affirmed that China had not shown that its conduct met the requirements of GATT defenses for conservation of exhaustible natural resources and found the export quotas inconsistent with GATT.

China had not shown that its conduct met the requirements of GATT defenses for conservation of exhaustible natural resources and found the export quotas inconsistent with GATT.

China did persuade the appellate body that it was only necessary that export restrictions be applied jointly with restrictions on production or consumption of the raw materials and that it was not necessary, as the panel report held, to also show that the export restrictions were necessary to make the production or consumption restrictions “effective.”

The appellate body further rejected China’s claim that its export quotas related to refractory grade bauxite were temporarily applied to prevent or relieve a critical shortage. China argued that long-term measures, such as the bauxite quota that had been in place for ten years, were “temporarily applied.”

The appellate body ruled that "temporarily applied” referred to an interim measure to address a passing need in a limited period of time. It was not sufficient that China’s quota was “subject to annual review” to make the quota temporarily applied.

The appellate body’s decision requires China to bring its legal measures pertaining to export duties and export quotas of these raw materials into conformity with China's obligations under its Accession Protocol and GATT, “such that the series of measures do not operate to bring about a WTO-inconsistent result.”

On March 13, 2012, the Obama administration announced that the U.S., EU, and Japan were requesting the WTO to commence consultations with China over similar export restraints of rare earth elements, as well as molybdenum and tungsten. If the consultations do not reach an agreed resolution, the U.S., EU, and Japan are expected to ask WTO to establish a panel to hear their complaints.

Clark R. Silcox, Legal Counsel
cla_silcox@nema.org

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1 An example would be an exception for measures "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption, provided such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade."
Commercial Construction Remains in the Doldrums

More than four years after the start of the financial crisis—and nearly three years after the dawn of the economic recovery—commercial construction activity remains hobbled. While the sharp declines of 2008 and 2009 are well in the past, the sector has seen precious little forward momentum even as broader economic conditions have gradually improved.

Retail, restaurant, and warehouse construction put-in-place together were only modestly higher in January 2012 than at their cyclical trough in late 2010. January’s figure was 55 percent below February 2008’s cyclical peak. The smaller office construction market has followed a similar path.

The good news is that sustained economic recovery means employment and income growth are on the rise, leading to increased demand for office and other types of commercial space. Still, significant amounts of vacant space remain to be absorbed and structural changes in housing and other industries will keep commercial construction growth to a minimum in the near term.

Tim Gill, Director of Economics | tim_gill@nema.org

EBCI, Indices Online

NEMA’s Electroindustry Business Confidence Index for current North American conditions can be found at www.nema.org/Apr12-EBCI.

Indexes for incandescent and compact fluorescent lamp shipments are available at www.nema.org/media/pr/20120315a.cfm.
April showers bring May flowers—and often water-damaged electrical equipment. Get advice on the safe handling of electrical equipment that has been exposed to water at www.nema.org/standards/water-damaged.cfm.

All electrical products are required to be marked with manufacturer model, production lot, and electrical ratings. The RightPlug standard defines how this information is encoded. Learn more at www.rightplug.org.

Work to review the recently approved IgCC and IEEC has already started. More information can be found at www.iccsafe.org/cs/IGCC/Pages/PublicVersionDevelopment.aspx.

New York City lighting renovation opportunities are subject to new mandates. Reserve your spot at NEMA’s TFM presentation by contacting erik.sorenson@nema.org.

Jumpstart your eBusiness initiatives with a series of webinars from IDEA that feature industry experts and real-life experiences of manufacturers and distributors. Go to www.idea-esolutions.com/webinars.


Electrical Safety Month

Lightning does strike twice. The first line of defense is proper grounding. May’s issue of ei explores how grounding is as important to power installations as a goalie is to a team.

At home and at work, electrical safety is just as important. Products made by NEMA members reduce the likelihood of injury and death. Along with them is the duty to warn. The ANSI Z535 series of safety signs and colors apply to laws governing product liability.

Finally, new technology demands new awareness. ESFI sponsors National Electrical Safety Month each May. This year, “be in the know about the new” engages the public in the safety of solar panels, wind power, and electric vehicles.

Next month’s issue of ei goes beyond plugs and outlets. Don’t miss it.

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We Make ENERGY STAR® and Required Safety Testing a Single, Seamlessly Efficient Process

Third-party certification and verification are now ENERGY STAR requirements. CSA International has earned EPA recognition as an ENERGY STAR Testing Facility and Certification Body. That means today we can meet all of your lighting product safety and energy efficiency testing needs with a single, seamlessly efficient testing program that saves you time and money.

Look to CSA International to meet ENERGY STAR requirements for lighting products including:

- Luminaires
- Lamps
- Decorative Light Strings

If you prefer to perform testing using your own testing laboratory, we can qualify your lab facilities under our EPA accepted, Witnessed or Supervised Manufacturers’ Testing Laboratory program, then verify your test results and submit them to the EPA.

Contact us today and learn how much time and money a combined safety and energy efficiency testing program with CSA International can save you.

1-866-463-1785  cert.sales@csa-international.org