

electroindustry

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Looking into Building Systems



NEMA



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electroindustry

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PULL AHEAD WITH
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DELIVERY



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When Congress passed the Energy Policy and Conservation Act in 2005, its members could not have foreseen the changes in security and life safety systems nor the vast advances in light-emitting diode (LED) technology that would evolve over the ensuing decade. NEMA has been on the leading edge of those changes, and we play an important role with Congress and the Administration to pass legislation and amend regulations that reflect the changes in technology.

In January 2017, for example, the House of Representatives acknowledged the need to “catch up” by passing two regulatory relief bills that include commonsense updates to existing Department of Energy (DOE) rules. NEMA supports these bills and looks forward to swift passage by the Senate and signature by the President:

- HR 511 Power and Security Systems (PASS) Act, which maintains an exemption from DOE efficiency requirements for external power supplies in standby or no-load mode for security and life safety products that must remain in active mode to initiate alarm communications
- HR 518 External Power Supply (EPS) Improvement Act, which clarifies the definition of external power supplies to avoid limiting the benefits of LEDs and OLEDs

Advocacy of this nature should—and will—remain a critical part of our association’s mission.

The goal of the Energy Policy and Conservation Act of 2005 was to improve energy efficiency and drive sustainable energy use. We are committed to driving building efficiency by promoting smart, connected products, but in ways that preserve consumers’ freedom of choice. After all, we believe consumers are best equipped to select the products that create better working and living environments in their buildings.

NEMA helps by identifying areas where regulation can be a barrier to achieving building efficiency goals. For example, LEDs significantly contribute to the energy efficiency of smart buildings. Eliminating the opportunity for standby power consumption in LEDs, as regulations threatened to do, could undermine the inherent value that LED technology can contribute.

Because the electrical world is highly regulated, I encourage Member companies to become active in NEMA committees and councils engaged in this important work. One of the special values of membership is the ability for all of us to join together and pool our contacts where we have plants and employees with NEMA staff, and Washington connections that allow us to be especially persuasive in dealing with the government.

Lastly, I would like to commend NEMA Communications staff and Member contributors for once again earning three Hermes Creative Awards and an Azbee Award of Excellence. These represent an outstanding achievement and demonstrate the vibrancy of our association as well as the importance of advocacy within the industry, the government, and the public. ☺

Michael Pessina
Chairman, NEMA Board of Governors

Looking Ahead: the Importance of Building Systems

Serving the American people as a member of Congress is an important lesson in the concept of systems. After all, every American schoolchild is taught that our government is a *system* of checks and balances, of which Congress is an essential part. Systems-based thinking is also an important part of lawmaking, as successfully addressing issues involving healthcare, the economy, and the environment requires a broad, systems-based approach.

Of course, systems-based thinking is hardly unique to the government. A common application in the private sector is in construction. Buildings are made up of systems: electrical, plumbing, heating, and more. When creating the electrical

system, it isn't enough to understand how all the components work individually. You have to understand how they work together as a system.

Taking one step back, the building is not only made up of multiple systems, but it can be considered a system itself with multiple subsystems. You can't just understand how the electrical system works in isolation; you have to understand how it works with the plumbing system, the heating system, and everything else. You could step back even further and ask how the construction of a building is part of an even bigger, overarching system.



Congressman Matt Cartwright represents Pennsylvania's 17th Congressional District. He serves on the House Committee on Appropriations and the Committee on Oversight and Government Reform.

This isn't just an academic exercise: there are important systemic factors that influence the construction of buildings well before the idea for any one particular building is even conceived. A huge variety of standards and codes are relevant to the built environment, including those developed by the National Electrical Manufacturers Association.

The process of standard setting is fairly decentralized. In many ways, this system has served America well, but it is always worth asking whether improvements can be made. One topic I have focused on in this respect is climate change. Are standard-setting bodies thinking about future climate changes, or are they only looking at historical data?

I asked the Government Accountability Office to look into this question, and they found that while some organizations have tried to use forward-looking climate projections when setting standards, many have had trouble doing so. This is not surprising. It can be very difficult to translate data and projections used by climate scientists into a form that is helpful for standard-setting bodies. However, that doesn't mean we shouldn't try. Our children will thank us tomorrow if we future-proof our standards today.

Fortunately, the federal government already employs scientists who address this problem. That is why I introduced HR 1464, the NIST Success Act. This bill would task the National Institute of Standards and Technology (NIST), in partnership with climate experts, with helping standard-setting bodies identify and use relevant climate change information. NIST would also help coordinate the participation of federal agencies in the standard-setting process.

The end result is that we will have more resilient standards for the built environment and across the private sector. When, for example, we want a building to be able to withstand a 50-year flood, we can be more confident that it will be able to handle the kinds of floods coming in the *next* 50 years, not those that came in the *last* 50. At a time when we are looking at climate change, this task could not be more essential. 🇺🇸

2017 ALZHEIMER'S DISEASE FACTS AND FIGURES

ALZHEIMER'S DISEASE IS THE
6TH LEADING CAUSE
OF DEATH IN THE UNITED STATES

MORE THAN
5 MILLION
AMERICANS ARE
LIVING WITH
ALZHEIMER'S
BY 2050, THIS
NUMBER COULD
RISE AS HIGH AS
16 MILLION

EVERY

66
SECONDS
someone in the
United States
develops the disease

MORE
THAN

IN
2016

15 MILLION AMERICANS
provide unpaid care for people with
Alzheimer's or other dementias

these caregivers provided
an estimated
18.2 BILLION HOURS
of care valued at over
\$230 BILLION

In 2017, Alzheimer's and other
dementias will cost the nation
\$259 billion
By 2050, these costs could
rise as high as

\$1.1 TRILLION



35% of caregivers for people with
Alzheimer's or another dementia
report that their health has gotten worse
due to care responsibilities, compared to

19% of caregivers for older people
without dementia


1 IN 3
seniors dies
with Alzheimer's or
another dementia


Since 2000, deaths
from heart disease have
decreased by 14%

while deaths from
Alzheimer's disease have
increased by 89%

**IT KILLS
MORE THAN**
breast cancer
and prostate cancer
COMBINED



ELECTRIC NEWS

MITA Joins a Great IDEA to Fight Alzheimer's

June is Alzheimer's & Brain Awareness Month—a good time to remember the 5.5 million Americans living with Alzheimer's disease and the millions more who are their caregivers.

Members of NEMA's Medical Imaging & Technology Alliance (MITA) are on the front lines in the battle to end the disease. Member companies manufacture the positron emission tomography (PET) scanners that assist in the diagnosis of Alzheimer's and other brain disorders.

Three of MITA's PET Group members, Avid Radiopharmaceuticals, Piramal Imaging, and GE Healthcare, are at the heart of a four-year research effort: the Imaging Dementia—Evidence for Amyloid Scanning (IDEAS) Study. Amyloid imaging uses a PET tracer to detect amyloid plaque buildup in the brain (a core feature of Alzheimer's disease) that can help clinicians determine whether symptoms are caused by Alzheimer's disease. The study will determine whether amyloid imaging improves clinical decision-making and patient outcomes for Medicare beneficiaries.

Until recently, amyloid plaques could be seen only during autopsies. While amyloid PET imaging results do not establish a diagnosis, they may increase a physician's confidence in determining the underlying cause of cognitive impairment and appropriate therapies. Results may also guide patient management. Proof of amyloid pathology is a requirement for inclusion in many Alzheimer's drug trials.

Although amyloid PET scans have been FDA-approved for several years, only now are they reimbursed by Medicare through the IDEAS Study. The Alzheimer's Association led the initiative to develop a Centers for Medicare and Medicaid Services (CMS) Coverage with Evidence Development program.

The study is conducted by the Alzheimer's Association and the American College of Radiology. MITA and the three amyloid tracer companies serve on the study's steering committee.

A total of 18,488 Medicare beneficiaries aged 65 and older who meet appropriate use criteria are being enrolled over a period of 24 months at sites throughout the United States. CMS approved the IDEAS study design in 2015. After the initial year of the study, nearly half the expected participants are registered across 824 study sites. ☪

Sue Bunning
Industry Director, Positron Emission Tomography, MITA

Learn more

Alzheimer's & Brain Awareness Month

www.alz.org/abam

Imaging Dementia—Evidence for Amyloid Scanning (IDEAS) Study

www.ideas-study.org

Looking Ahead for Building Systems

A building system encompasses interconnected systems that function as a complex whole: the envelope, including the foundation, walls, windows, and roof; interior structural systems such as floors, walls, and elevators; and functional systems such as electrical power, heating, cooling, ventilation, plumbing, lighting, security, and telecommunications.

Building systems must be designed, installed, and operated seamlessly to provide shelter, safety, comfort, and convenience to occupants.

Living Smart

In America, the average person retires at the age of 62 and lives to be 78.7 years old. As of 2014, employed individuals spend an average of 47 hours per week working. If an employee works 47 hours per week from the age of 18 to 62, that person spends almost 110,000 hours at work. For most workers, much of this time is spent indoors.

Suzanne Alfano,
CET, MBA, Industry
Director, Building
Systems, NEMA

Ms. Alfano's expertise includes the harmonization of codes and standards related to electrical product safety, energy efficiency, distributed generation, and renewable energy.



Miles of conduit wend their way through One World Trade Center in New York City to supply power to mechanical, electrical, plumbing, HVAC, and communication systems and other equipment. Photo by Eric Maier

According to various studies, we spend as much as 90 percent of our time inside buildings. Thus, designing and building great spaces that incorporate the latest technologies and last for many years should be the emphasis.

Residential, commercial, and industrial building designs are moving toward state-of-the-art environments that maximize functionality, convenience, and efficiency. Responsive and timely installation codes, product standards, and building systems design are prerequisites for facilitating and expediting market growth and employing new technologies in the intelligent and connected buildings space. Collaboration among all stakeholders—investors, developers, architects, designers, builders, contractors, building code officials, and users—must take place during the early development planning stages.

Building Smart

Computer-based building management and building automation systems monitor and control mechanical and electrical equipment as well as a building's internal functional systems. Automated building systems can control HVAC and announce emergency situations when they are interconnected with lighting, for example.

These systems can be connected to other technologies. Energy storage devices have the capacity to store energy generated from renewable sources, such as rooftop solar panels, that may be used at a later time to power smart buildings. Stored energy may also provide backup power during utility outages (eliminating the need for diesel generators), or may even be sold back to the utility.

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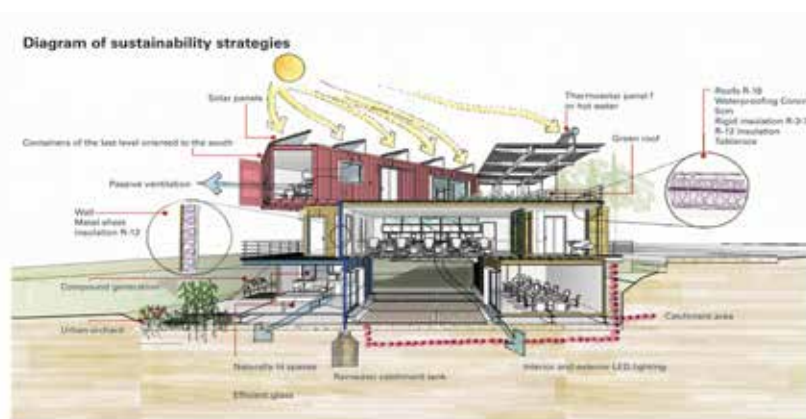


Diagram of sustainability strategies. Courtesy of Eaton

Adding Value through ESPCs

As energy efficiency gains increasingly more attention on local, national, and international fronts—often enabled and assisted by NEMA member products—many companies are opening business arms related to efficiency or founding new efficiency-minded businesses. The prime example of this is the Energy Service Company (ESCO) model where business is generated in servicing, improving, and monitoring a building or facility or municipal power grid.

A favored vehicle to undertake capital improvements such as these is through an Energy Savings Performance Contract (ESPC) whereby the business performs retrofitting and improvements for no charge, and in turn is awarded a percentage of the operating funds saved by the facility owner post-completion over a designated period of time.

ESPCs are attractive to federal agencies because they increase efficiency and thereby reduce their energy costs using private sector funding and expertise. Using an ESPC eliminates the need for appropriated dollars for equipment replacement and for operations and maintenance of the energy-using equipment.



Secure the Chain

High-performance buildings rely on a secure supply chain. Protecting the integrity of the supply chain throughout a product's lifecycle is addressed in NEMA CPSP 1-2015 *Supply Chain Best Practices*.

As opposed to being an all-inclusive document, CPSP identifies best practices that vendors can implement as they develop, manufacture, and deliver products as part of the supply chain.

For each phase of the product lifecycle, the following information is provided:

- Identification of threats and their relevance
- Analysis to determine implications
- Recommendations that electrical equipment and medical imaging manufacturers should incorporate

Download CPSP 1-2015 on the NEMA website.

Continued from page 7

Electric vehicles may also serve as energy storage systems. Electric vehicle charging stations, which are being installed in smart buildings and elsewhere, reflect the steep growth trajectory of the lithium-ion battery market.

Conserving Smart

Energy management includes planning and operating energy production and consumption in a building. Typical objectives include energy resource conservation, climate protection, and cost savings, allowing occupants permanent access to the energy they need. Energy management closely aligns with environmental management, production management, logistics, and other established business functions.

In response to energy conservation and the reduced dependence on fossil fuels, building designers are changing the way businesses, residences, and communities are planned, constructed, maintained, and operated. Some projects pursue LEED (Leadership in Energy and Environmental Design) certification earn points across several areas that address sustainability issues.

Another schema is the Environmental Protection Agency's ENERGY STAR® for Buildings, a successful voluntary energy-efficiency program for new and existing buildings.

Others align themselves with ISO 9000 *Quality management systems—Fundamentals and vocabulary* and the ISO 14000 family of standards for environmental management systems. These are voluntary international standards that declare an organization's commitment to quality and environmental management. Building operations play a key role meeting and maintaining compliance with these standards.

We are living in exciting times when innovation is moving more rapidly than ever before. In the following series of case studies, we look into exemplary building designs of NEMA members' offices and factories, as well as projects for which members have supplied leading-edge system designs and products. NEMA members are meeting the challenge to adapt quickly so that our electrical products and systems are at the forefront of building systems design and construction. ☎

New York City facility managers who measure the energy performance of their buildings are investing in energy-saving technologies and operational improvements in order to improve their buildings' energy efficiency, according to a survey conducted by NEMA in 2016.

Cities around the United States are implementing building energy benchmarking and transparency ordinances that require large buildings to measure and disclose their energy use as a way to encourage energy efficiency improvements. These policies allow building owners and occupants to compare the energy performance of their buildings with that of similar buildings.

Multiple studies have shown that commercial, multifamily, and public buildings that have benchmarked energy use pursuant to city benchmarking ordinances have reduced their energy use and increased their ENERGY STAR Portfolio Manager® scores faster than buildings not subject to such laws. These findings are consistent with the conclusion that benchmarking laws are catalyzing increased building efficiency.

Download a copy of the NEMA survey report at www.nema.org/benchmarking-report. ☎

Energy Benchmarking Equals Energy Savings

YASKAWA

PROVEN WORLDWIDE



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Call us today.**



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<http://budurl.me/YAI1035>

NEMA Members Go Big on Innovation

From iconic super buildings to reimagined shipping containers, trends in building systems increasingly embody analytics, connectivity, and energy-efficiency technologies.

Low-cost sensors, for example, are behind a new generation of connected technologies. Connectivity optimizes building systems through monitoring the signal strength of connected devices and detecting radio frequency interference by humans or animals. This creates a new type of occupancy sensor that can count building occupants during an emergency, locate intruders during a break-in, or monitor a nursing home for problems.

Given that as much as 40 percent of a new building's energy efficiency is lost within three years from a lack of proper operation and maintenance, the combination of sensors, submetering, and computer processing power has given rise to building analytics that can identify faults and rapidly diagnose problems, thereby saving time, energy, and money.

In the examples provided by NEMA member companies on pages 10 through 16, we look inside building systems to see legacy products (e.g., contact switches), new technologies (e.g., sensors), and techniques (e.g., building analytics) that work together to achieve high performance and sustainability. ☞

CASE STUDIES

Boltswitch, Inc.

ONE WORLD TRADE CENTER
New York, New York



- One World Trade Center design requirements specified bolted-pressure contact switches (UL 977 listed) for the high-ampacity service equipment and subsequent distribution boards.
- At least 150 fusible switches have been supplied to World Trade Center projects so far.
- Specifications were based on the switches' history of quality, reliability, and ability to withstand numerous stressful situations.
- Bolted-pressure contact switches allow for maximum power control in a minimum space while providing numerous options for construction and arrangement.
- Applications include service entrance equipment, ground fault, and 200,000 ampere-withstand ratings.

boltswitch[®]

····· bolted pressure contact switches



In 2013 Boltswitch, Inc. partnered with Electrotech Service Equipment Corp. to provide switches and switchgear for the new One World Trade Center in New York City.

More than 100 bolted pressure contact switches were specified for the project based on their history of outstanding performance. We are honored to have been chosen to be a part of such a historic project.

www.boltswitch.com

Champion Fiberglass

ELECTRICAL CONDUIT AND STRUT MANUFACTURING PLANT

Houston, Texas



- Following a devastating fire in March 2016, the manufacturing facility rebuilt in record time—four months, versus the estimated six to nine months
- The 100-percent digital facility increased capacity by 20 to 25 percent
- Fire protection enhanced by state-of-the-art sprinkler with an automatic gas-fired generator and fire alarm systems with two-hour fire-rated walls between production areas and automatic roll-down doors that contain fire-activated closing mechanisms
- Upgraded power system and advanced electrical infrastructure, compliant with the *National Electrical Code*®
- Efficient LED lighting
- Real-time monitoring
- ISO 9001:2008 certified, soon to be ISO 14001 certified

Delta Products Corporation

DELTA AMERICAS HEADQUARTERS

Fremont, California



- LEED platinum–certified facility
- High-efficiency HVAC system includes ground source heat pump, bidirectional radiant heating and cooling, active chilled beams, and energy-saving variable-frequency drives
- 12,000-gallon closed-loop system with 92 miles of plumbing reduces heating and cooling costs by as much as 60 percent
- 616 kW rooftop solar system with 28 high-efficiency photovoltaic (PV) inverters and more than 2,400 PV panels that are expected to generate more than 1,000 MWh of electricity per year
- 140,000-gallon rainwater harvesting tank collects water from rooftops and irrigates native and drought-tolerant plants, which reduces municipal potable water consumption by 100 percent
- Energy management with building automation and real-time monitoring

Eaton

THREE CONSULTORÍA MEDIOAMBIENTAL CORPORATE OFFICE Monterrey, Mexico



- The environmental consultant's corporate office is the first in Latin America and the second worldwide to obtain LEED Platinum BD+C v4 certification for new construction.
- Lighting features linear LED suspended luminaires that support maximum energy savings while achieving desired light levels; solutions include surface-mounted downlights, track fixtures, and emergency lighting.
- Daylighting controls maintain a constant level regardless of natural light.
- LED wall packs illuminate the perimeter and parking lot to avoid light trespass with no uplighting.
- Construction consisted of shipping containers that had reached the end of their useful life and the building's orientation considered wind currents to better ventilate spaces.
- The Three corporate office produces all the energy it consumes through solar panels.
- Rainwater and air conditioning condensates are directed to water tanks.

Danfoss Drives

DANFOSS DRIVES FACTORY Loves Park, Illinois



- The LEED-certified Danfoss Drives factory manufactures fractional- through megawatt-variable frequency drives. The state-of-the-art building facilitates energy savings, prevents waste, and encourages innovation.
- Variable-frequency drives that reduce airflow and water flow were installed on all pumps, motors, and rooftops.
- Rooftop solar panels generate power that is used to produce Danfoss products.
- The entire facility is operated with a building management system that controls and monitors all HVAC systems.
- Installation of lighting controls on the production floor allows the facility to operate plant lighting based on production schedules.
- Skylights installed in the manufacturing area reduce energy consumption and provide natural light for employees.

Legrand, North America

LEGRAND, NORTH AMERICA CORPORATE HEADQUARTERS
West Hartford, Connecticut



- Legrand, North America's headquarters is located in a nearly 100-year-old facility and is pursuing LEED certification.
- The company is continually retrofitting the building with energy-saving, efficient products, such as a digital lighting management system, LED lighting, and occupancy sensors.
- A 500 kW, solid-oxide fuel cell system provides cleaner, more efficient power to its headquarters.
- Daily, the fuel cell generates an average of 12,300 kWh of energy and provides at least 80 percent of the energy needed to power the 263,000 square-foot facility.
- Since its installation in May 2016, the fuel cell has prevented 1,967,576 pounds of carbon emissions.

Light Engine America Inc.

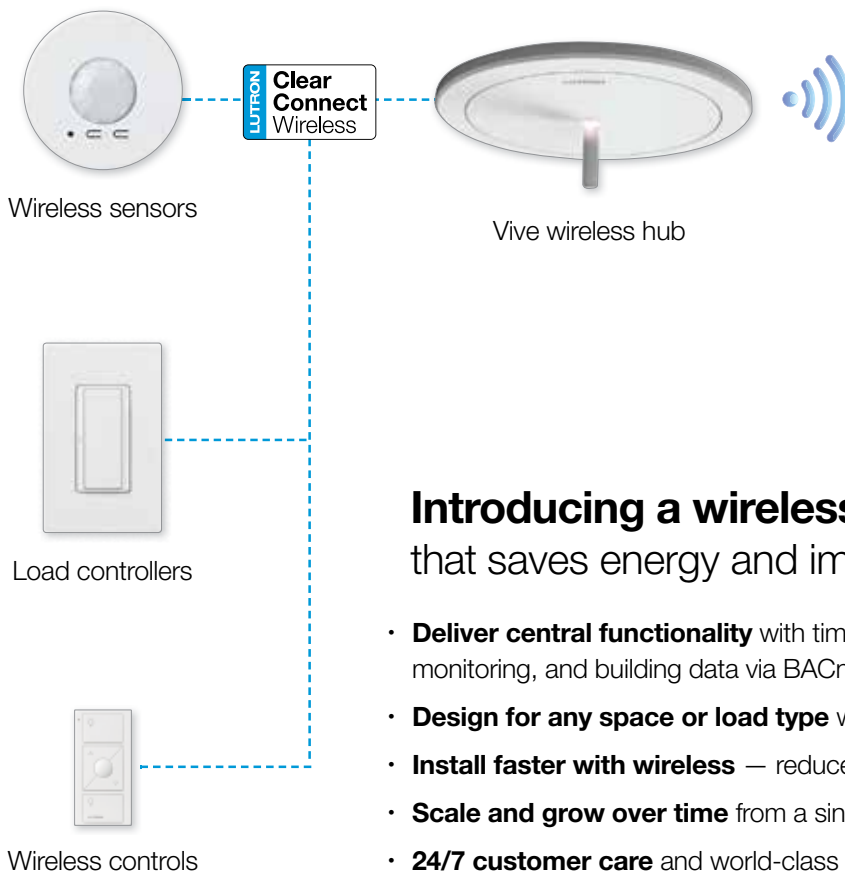
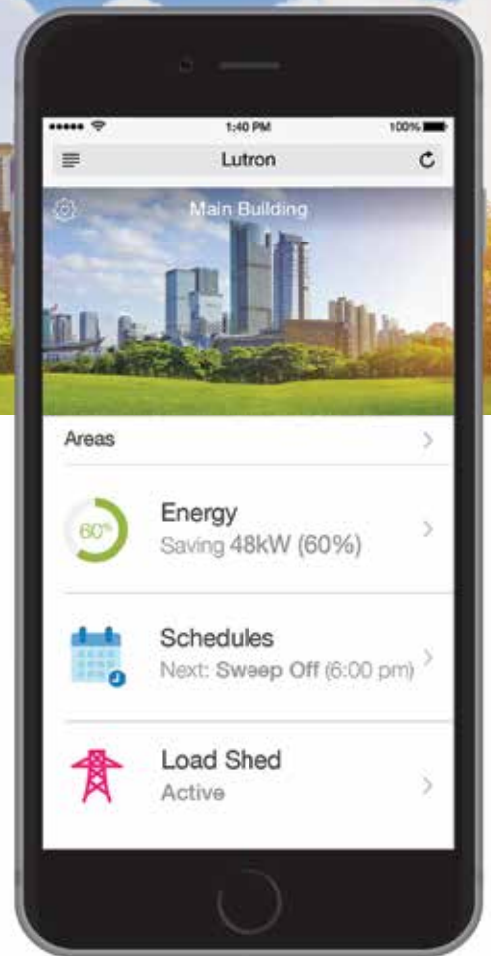
LIGHT ENGINE INDUSTRIAL COMPLEX
Huizhou, China



- World-class, modern 130,000 square-meter manufacturing facility achieves TS16949, ISO 9001, and ISO 14001 certification.
- The facility offers a wide-ranging, central building management system for energy saving optimization, full use of natural sunlight, and specialized systems to measure and monitor carbon levels.
- State-of-the art LED lighting provides 100 percent of the lighting.
- An addressable fire and mass evacuation system employs LED fire devices, supplemented with bidirectional LED lighting and intelligent visual displays for optimal safety.
- High-end category 6A and 7 and power-over-Ethernet wiring ensures optimal communication speeds.

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lighting control

VIVE



Introducing a wireless lighting control system that saves energy and improves occupant comfort

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- **Design for any space or load type** with a full suite of wireless controls
- **Install faster with wireless** — reduce labor time by up to 70%
- **Scale and grow over time** from a single room to a whole building
- **24/7 customer care** and world-class support allow you to specify with confidence

Need help specifying Vive on your commercial project?

Please visit lutron.com/specifyvive.



Schneider Electric

THE EDGE

Amsterdam, the Netherlands



- The Edge is the most sustainable building on earth, with a BREEAM-NL rating of 98.36 percent.
- A net zero-energy building, the building produces 102 percent of its own energy.
- No employee has filed a comfort complaint since the building opened.
- The state-of-the-art building makes it extremely attractive to young talent.
- Seventy-two percent of employees enjoy having a sense of control over their environment, enabled by a smart phone app.

Universal Lighting Technologies

PEÑA STATION NEXT

PANASONIC TECHNOLOGY & BUSINESS SOLUTIONS CENTER

Denver, Colorado



- Networked lighting control uses centralized, decentralized, and Bluetooth® wireless technology for remote access and system monitoring.
- Occupancy and daylight sensors save energy by optimizing levels based on time of day, occupancy, and natural light.
- Digital user interfaces in conference rooms customizes light for presentations and meetings.
- Color control LED technology fine tunes light as part of a human-centric lighting control strategy.
- A solar+hybrid microgrid deploys a battery energy storage system that eliminates the need for backup generator.
- A crowd comfort app uses QR codes to gain real-time feedback from occupants.
- Highly efficient variable HVAC system reduces the building's energy load.
- State-of-the art network operation center monitors and manages a network of solar assets.



SURGE PROTECTION

Keeping your Electronics and Home Safe



The National Electrical Manufacturers Association estimates that **60-80%** of surges originate from **internal sources** (within a home or business). Keep your valuable electronics **safe** by protecting them from the surges that can **damage or destroy them**.

! What is a power surge? A power surge is a sudden and unwanted **increase in voltage** that can damage, degrade or destroy electronic equipment. Surges can occur when large appliances, such as air conditioners, turn on and off. Surges can also originate from electric utilities or lightning.

LEVELS OF PROTECTION

GOOD



Point-of-Use Surge Protection



Easy to use
- just plug in.



Only protects electronics **plugged into the device**.



Must be **replaced** over time or after a major surge event.

BEST

Whole Home Surge Protection



Must be installed by a **qualified electrician**.



Provides protection for your **entire electrical system** at home including large appliances, outlets, and light switches.



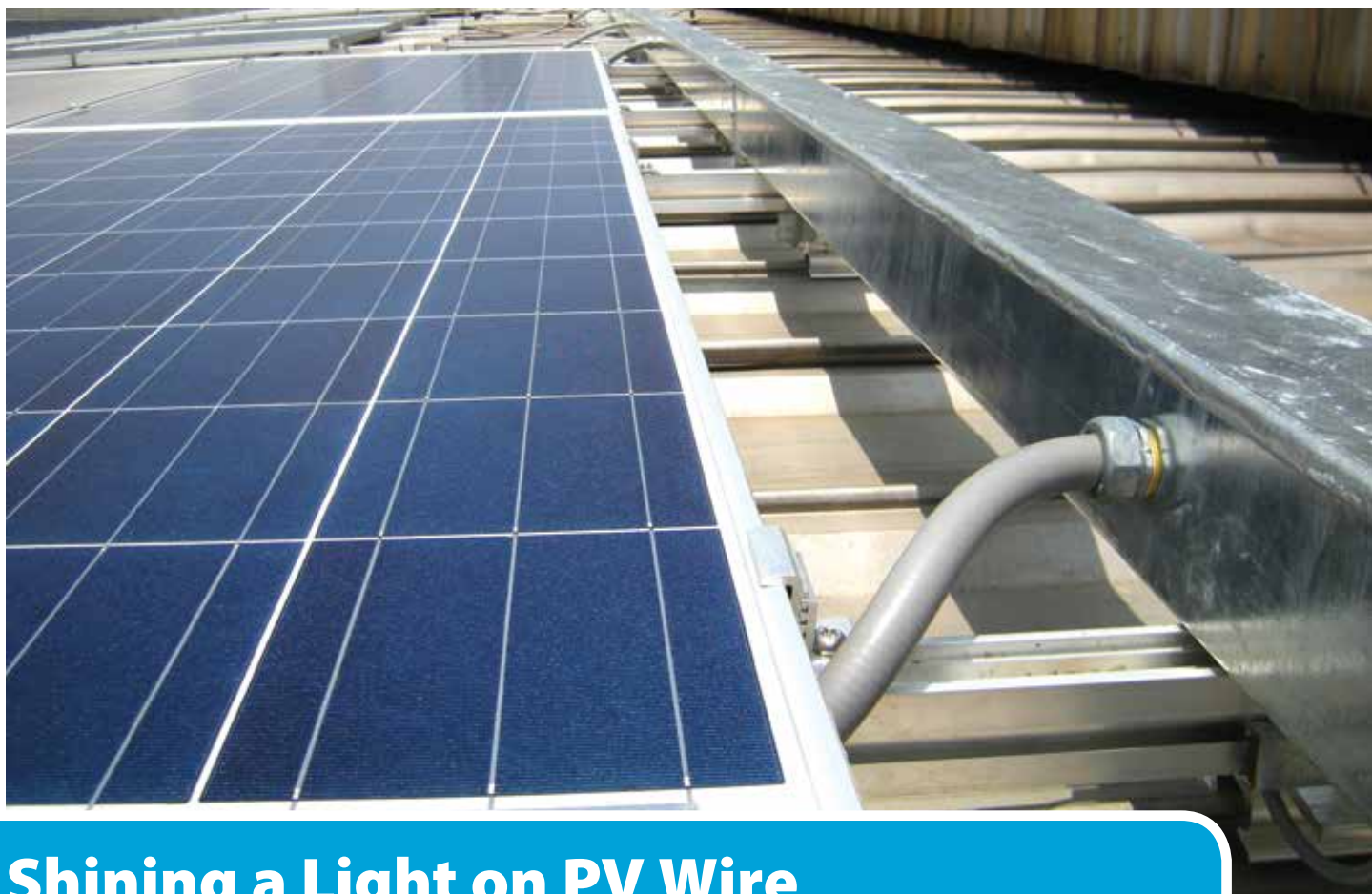
Protects against **larger surges** and provides **longer lasting** surge protection than point-of-use devices.



No surge protection can handle a **direct lightning strike**. **Disconnect** sensitive electronics if you suspect a surge is coming.

Power strips and surge protectors are **not the same**. Not all power strips offer surge protection.





Shining a Light on PV Wire

Christel Hunter,
Director, Codes
and Standards,
Cerro Wire LLC

The Solar Energy Industry Association (SEIA) reports that more than 42 GW of solar capacity has been installed in the United States as of the end of 2016; SEIA predicts that by 2021 there will be more than 100 GW of solar installed. With the continued demand for solar energy, photovoltaic (PV) wire continues to be a subject of discussion within the NEMA Wire & Cable Section.

The *National Electrical Code*® (NEC) Article 690 permits the use of listed PV wire for single-conductor applications installed in outdoor, exposed locations and within outdoor tray cables. When PV wire is used in a conduit system, the designer and installer must use the outer diameter values provided by the wire manufacturer to calculate conduit fill, since PV wire dimensions are not included in the NEC. PV wire may also be used in direct burial installations if it is listed and identified for direct burial.

NEMA members participate in the CANENA harmonization process, where there is a current effort to harmonize the product construction and testing standards for PV wire. Once completed, the draft

standard will be processed by UL, the CSA Group, and the Mexican Association of Standardization and Certification (ANCE) for official recognition within the United States, Canada, and Mexico.

PV wire has to endure a variety of rugged installation conditions, such as extreme high and low temperatures, exposure to direct sunlight, direct burial, flexing when used with tracker modules, and wet locations. During the product certification process, PV wire is tested to verify that it can withstand expected conditions.

Currently, ANSI/UL 4703 *Standard for Safety for Photovoltaic Wire* is used to evaluate PV wire for use in the United States. PV wire can be marked up to 90°C in wet locations and up to 150°C in dry locations, with conductor voltage ratings of 600 V, 1000 V, or 2000 V.

Harmonizing the requirements for PV wire in North America will allow for greater efficiencies for manufacturers and increased choice for PV wire consumers. ☞



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State Advocacy Efforts Pay Off

Diligence by NEMA and local grassroots efforts to promote three-year adoption cycles for national model building codes paid off in Florida, Oklahoma, South Carolina, and Washington. NEMA members, field representatives, and State Government Relations staff collaborated to see these efforts through to fruition.

These states, which previously had adopted three-year cycles, were poised to pass legislation delaying code adoption in response to input from the construction industry that the constant updating of codes is burdensome.

As a result of an outpouring of opposition by NEMA, the International Code Council (ICC), the insurance industry, and advocates for fire safety, lawmakers decided to go back to the drawing board and work with stakeholders on compromises.

In Florida, NEMA helped to create a coalition with other, like-minded stakeholders such as the ICC.

We asserted that the state's current code adoption process achieves the goal of requiring buildings, homes, and other occupancies to the meet minimum standards for electrical, fire, life safety, and energy efficiency.

We have continued to work with the homebuilders and legislators for final language for Oklahoma's SB 283, which would remove references to code adoption cycle delays while keeping intact language related to training and other topics.

South Carolina's six-year code adoption cycle bill is identical to last year's bill. It failed to pass out of the Senate by the crossover deadline, thereby ensuring its defeat this session.

In Washington, NEMA opposed SB 5500, a six-year code cycle bill. The Local Government Committee agreed that a six-year cycle was not in the best interests of the state and did not hear the bill nor bring it up for action in committee. 🇺🇸

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Vigorous Code Adoption Activity Continues in the South

Nearly every state in the NEMA Southern Region is actively undergoing the regulatory code update process or has current legislation being considered that impacts code adoption. The NEMA Field Representatives and other members of the Coalition for Current Safety Codes are working hard with stakeholders and other interested parties to get the most current editions of codes and standards adopted and enforced.

Florida

The Florida Building Commission and Florida Fire Code Advisory Council will complete the rulemaking process this summer to put the 2017 Florida Building Code and Florida Fire Prevention Code (6th Edition) on track for an effective date of December 31, 2017. The 2017 code is based on the 2015 International Code Council codes (I-Codes) and 2014 *National Electrical Code*® (NEC). The 2017 Florida Fire Prevention Code is based on the NFPA 1-2015, NFPA 101-2015, and NFPA 72-2013 standards.

The Florida legislature is considering several code adoption bills that will significantly affect the code-update process. NEMA staff is actively monitoring the legislation and working with state lawmakers to limit the impact to electric, fire, and life safety requirements.

Georgia

Georgia is wrapping-up review of the 2017 NEC and 2015 International Energy Conservation Code (IECC). The State Codes Advisory Committee will recommend adoption of the updated codes to the Department of Community Affairs Board in November. The 2017 NEC and 2015 IECC are expected to go into effect on January 1, 2018.

Louisiana

The Louisiana State Uniform Construction Code Council has submitted rulemaking to the state legislature to adopt the 2015 I-Codes and 2014 NEC with an effective date of July 1, 2017.

North Carolina

The North Carolina Building Code Council moves closer to adoption of the 2018 state building code based on the 2015 I-Codes and the 2017 electrical code that is based on the 2017 NEC. The regulatory

process is expected to be completed by December 2017, followed by legislative oversight and approval of the updated code adoption package. The current timeline anticipates an effective date of January 1, 2019.

Tennessee

The Tennessee Department of Commerce and Insurance has filed a rulemaking to adopt the 2014 NEC with an effective date of June 21, 2017. The state has been enforcing the 2008 NEC since January 28, 2009, and skip the 2011 edition.

Texas

The Texas Electrical Safety and Licensing Act requires the Department of Licensing and Regulation to adopt the most current edition of the NEC as the electrical code for the state. The 2017 NEC will be the minimum standard for all electrical work in Texas when adopted September 1, 2017.

Virginia

The Virginia Department of Housing and Community Development is in the final regulatory phase to adopt the 2015 Uniform State Building Code and Statewide Fire Prevention Code based on the 2015 I-Codes and 2014 NEC. A series of workgroup meetings have been scheduled throughout 2017 followed by not less than two rulemaking hearings with the Board of Housing and Community Development. The current timeline establishes an effective date of March 1, 2018. There is no pending code adoption legislation in Virginia. ☺



For more up-to-date code adoption information in all 50 states, subscribe to the NEMA Code Alerts email service at www.nema.org/technical/code-alerts.

Cable Set for Power, Utility, and Telecoms

A newly packaged set for the wire and cable industry is now available on the NEMA Standards Store website.

“These standards are a blend of power and utility products and, to a lesser extent, telecommunication products,” said Richard Beggs, secretary of Insulated Cable Engineers Association, Inc. (ICEA). “The users who would buy this set are the utility, energy distribution, and providers of electrical grid.”



This set contains all nine ANSI/NEMA/ICEA wire and cable standards:

- WC 51/ICEA P-54-440-2009 (R2014) *Ampacities of Cables Installed in Cable Trays*
- WC 54/ICEA T-26-465-2013 *Guide for Frequency of Sampling Extruded Dielectric Power, Control, Instrumentation and Portable Cables for Test*
- WC 57/ICEA S-73-532-2014 *Standard for Control, Thermocouple Extension, and Instrumentation Cables*
- WC 58/ICEA S-75-381-2008 *Portable and Power Feeder Cables for Use in Mines and Similar Applications*
- WC 66/ICEA S-116-732-2013 *Standard for Category 6 and 6A, 100 Ohm, Individually Unshielded Twisted Pairs, Indoor Cables (With or Without an Overall Shield) for Use in LAN Communication Wiring Systems*
- WC 70/ICEA S-95-658-2009 *Power Cables Rated 2,000 V or Less for the Distribution of Electrical Energy*
- WC 74/ICEA S-93-639-2012 *5-46 kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy*
- WC 71/ICEA S-96-659-2014 *Standard for Nonshielded Cables Rated 2001-5000 V for Use in the Distribution of Electric Energy*

The cable standards set is available for \$999 in hard copy and as an electronic download.

OTHER RECENTLY PUBLISHED STANDARDS

ANSI C12.20-2015 *American National Standard for Electricity Meters—0.1, 0.2, and 0.5 Accuracy Classes*, available in hard copy and as an electronic download for \$94.

NEMA 77-2017 *Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria*, available in hard copy and as an electronic download for \$265.

NEMA ICS 5-2017 *Industrial Control and Systems: Control Circuit and Pilot Devices*, available in hard copy for \$215 or as an electronic download at no cost.

NEMA OS 4-2016 *Requirements for Air-Sealed Boxes for Electrical and Communication Applications*, available in hard copy and as an electronic download for \$60.

NEMA RV 2-2016 *Application and Installation Guidelines for Nonmetallic-Sheathed Cable and Underground Feeder and Branch Circuit Cable*, available for \$82 in hard copy or as an electronic download for no cost.

NEMA TCB 4-2016 *Guidelines for the Selection and Installation of Smooth-Wall Coilable High-Density Polyethylene (HDPE) Conduit*, available in hard copy and as an electronic download for \$81.

Purchase these and other NEMA standards at www.nema.org/standards-store. ☎

IEC Updates Standards and Procedures

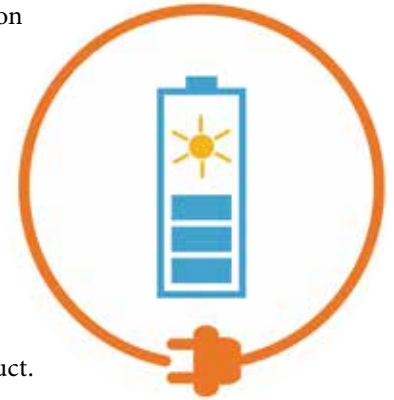
Recent revisions to the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) directives include procedural changes for project management. Notably, the time allotted for different stages of standards development has been shortened. The IEC implemented a means for individuals to submit comments during the development and maintenance of the standards, with the intention of involving additional stakeholders, but relatively few comments have been submitted.

The IEC and CENELEC (the European Union's body for electrotechnical standardization) implemented an updated agreement that does not affect NEMA membership. Meanwhile, the IEC suspended participation by Libya, based on non-payment of dues. It also expanded involvement with the Gulf Standards Organization and South Asia Regional Standards Organization.

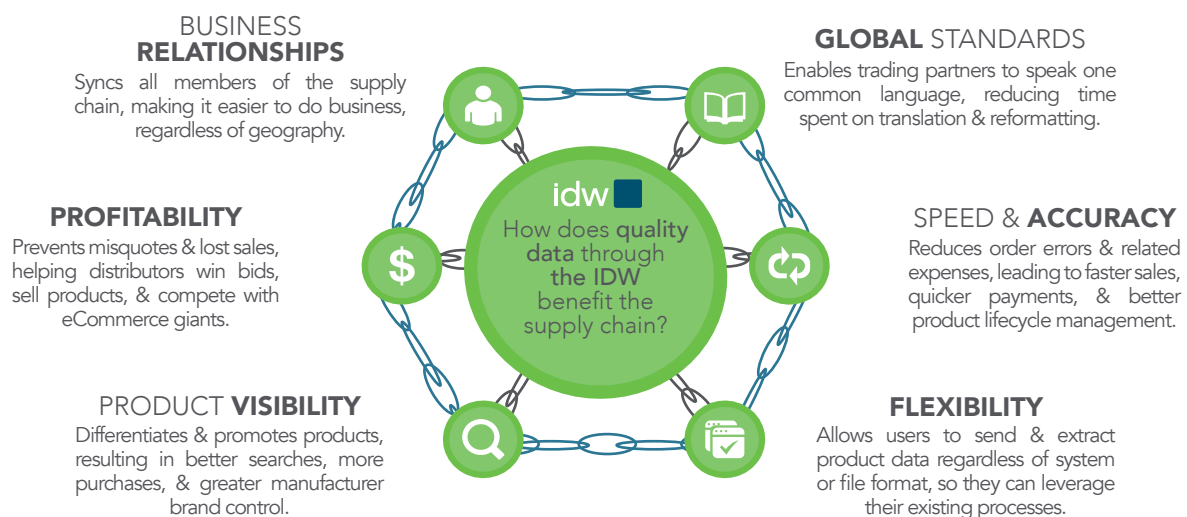
Emphasis and activities for systems including low-voltage direct current (LVDC), smart cities, non-conventional distribution networks and microgrids, and cybersecurity continues to grow.

The Advisory Committee on Safety's designation of group safety function in IEC 62477-1 *Safety requirements for power electronic converter systems and equipment* makes this document the base standard for products such as uninterruptible power sources, adjustable-speed drives, and renewable energy systems. Others may be added to the list of devices that should use it as a reference. This essentially supersedes the work done by the product committee, although permission is given to incorporate specific details unique to the product.

IEC Systems Evaluation Group 4 established an LVDC systems committee to coordinate standardization. Driving these efforts are users in countries and regions without reliable or existing electrical grid infrastructure, as well as some international suppliers. One of the key steps in the roadmap for LVDC expansion is standardization for and market availability of protective devices, such as direct current residual circuit devices (called ground-fault circuit interrupters in the United States).⁶


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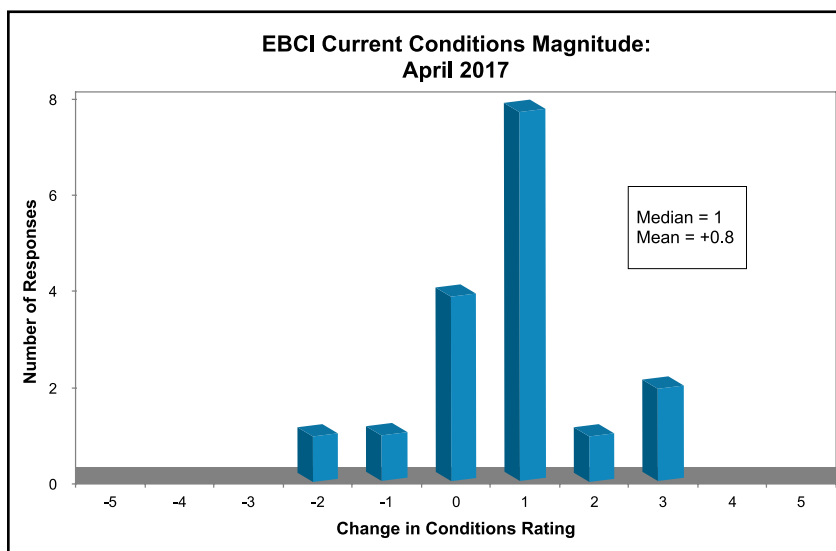
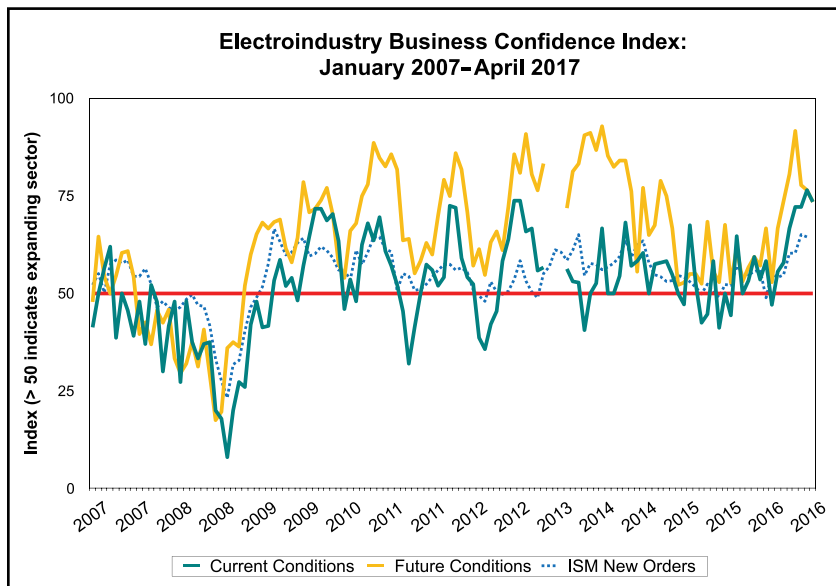
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Conditions Indexes Down but Remain Strong

	Current Conditions (compared to previous month)	Conditions Six Months from Now (compared to current conditions)
EBCI	73.5 ▼	73.5 ▼
Better	53% ▼	65% ▼
Worse	6% ▬	18% ▼
Unchanged	41% ▲	18% ▲



For the second month in a row, values in the current and future Electroindustry Business Conditions Index (EBCI) matched up exactly; both edged down from 76.5 in March to April's reading of 73.5.

Although the topline values were identical, the underlying response patterns diverged. In the current conditions measure, 53 percent of the respondents reported better conditions in April, down from 59 percent in March. On the flip side, the share of panel members noting unchanged conditions increased by six points to 41 percent in April, while those seeing worse conditions held steady at six percent.

The survey's measure of the intensity of change in electroindustry business conditions showed improvement, and a wider range of responses, from the previous month, as the mean score moved up by one-tenth of a point to +0.8 in April while the median value remained at +1. In March, reported intensity values ranged from -1 to +2 but widened to include a minimum value of -2 and a top end of +3 in April. Panelists are asked to report intensity of change on a scale ranging from -5 (deteriorated significantly) through 0 (unchanged) to +5 (improved significantly).

As federal policymakers appear to be settling into something of a new normal, the current conditions reporting seems driven less by inside-the-beltway affairs and more by on-the-ground business activity. However, the view six months ahead is still clouded by concerns about the shape of infrastructure plans and healthcare and tax reform proposals.

A smaller share of our panel (18 percent in April versus 35 percent in March) expected conditions to be unchanged in six months. Sixty-five percent of our respondents expected better conditions, up from 59 percent in March, but the proportion of those expecting worse conditions tripled from 6 percent last month to 18 percent in April.

Visit www.nema.org/ebci for the complete April 2017 report. 📄

NOTE: We have found that NEMA's EBCI Current Conditions and the ISM New Orders Index values track reasonably well together, and we now include the ISM data alongside the NEMA series for comparison purposes.

The current month's Manufacturing ISM® Report On Business® may be found at www.nema.org/ism-report-on-business.

Bill Buckson Bids Goodbye



After 12 years of what he called “herding cats” in NEMA’s IMG, IIS, and 5FU sections, Bill Buckson bid his colleagues adieu during a retirement party in his honor at the NEMA Conference Center. After a career that spanned work at Hubbell’s Wiring Device and Lighting divisions, CSA, and the U.S. Navy, he is trading comradery for country living.

Among those who joined Bill (far left) in a toast were Mike Leibowitz (who will assume program management for the Motors and Generators and Industrial Products and Systems sections), Christine Shattuck, Maria Northup, Marilyn Williams, Letitia Thompson, Clark Silcox, Arlethia Johnson, and Gene Eckhart. Photo by Pat Walsh

I Am NEMA



Suzanne Alfano, Industry Director, NEMA

While I am new to NEMA, and more recently the High Performance Buildings Council, I am not new to the electroindustry.

Before joining NEMA eight months ago, I worked for more than 25 years in developing and harmonizing electrical code and standards within the Council for Harmonization of Electrotechnical Standardization of the Nations of the Americas (CANENA) and the International Electrotechnical Commission (IEC) forums. I also consulted on electrical safety and most recently worked for our sister trade association to the north, Electro-Federation Canada.

I have a passion for this industry and the good work we collectively do. It creates value for members and the industry at large. By working together, we develop and advocate industry positions; liaise with the government; create standards, guides, and white papers to promote member products and services; and facilitate meetings and networking events.

The adage that all boats rise in the same ocean applies to an industry association, especially if you consider that we live in challenging times. Together, we identify and tackle tough issues that are important to member companies, whether they be domestic, regional, or global. I am pleased to be at the forefront of that effort with NEMA and our members at the helm. 



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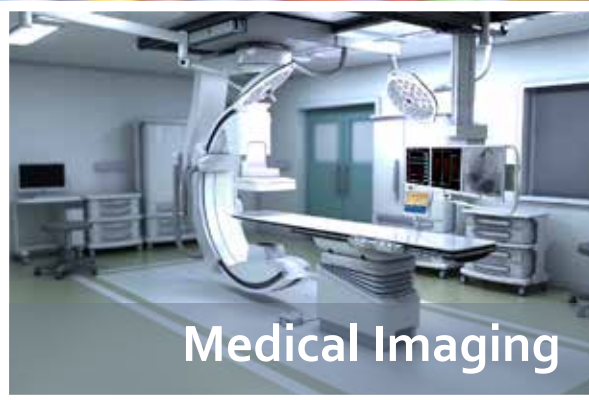
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