



NATIONAL ASSOCIATION OF
ELECTRICAL DISTRIBUTORS

Smart Tools for Smart Distribution®

Going Green Inside and Out: Findings in Brief

Services & Solutions to Help Customers Go Green

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Introduction

Energy management and energy efficiency: you've heard about this growing market on the news and from the Oval Office. Is your company taking advantage of this opportunity—estimated at 1 billion square feet?

When President Obama put clean energy at the forefront of his economic stimulus agenda, it reinforced energy management and energy efficiency as major priorities in the U.S. As a result, electrical distributors and manufacturers are presented with an unprecedented opportunity to expand energy management products and system sales. Not only does this market offer new areas of growth, it also helps diversify

your service offerings, insulating your company from market instability.

To take advantage of this opportunity—and outpace competitors—it's key to understand energy efficiency technologies and solutions. This brief outlines the energy management services and products being offered by electrical distributors, plus provides insight into the future.

LIGHTING COMPARISON

Incandescent/ Fluorescent Lamps

VS.

Light Emitting Diodes (LEDs)

- >> Emit light when the filament is heated by electric current.
- >> An electric arc excites mercury atoms, which converts ultraviolet (UV) radiation into visible light.
- >> Incandescent lamps last about 1,000 hours; CFLs last up to 10,000 hours; high-quality linear fluorescents last about 30,000 hours.

- >> LEDs produce light via semiconducting diodes.
- >> They contain no moving, fragile parts, which is why they are also known as solid-state light (SSL) sources.
- >> Good quality white LEDs are expected to have a useful life of 30,000 to 50,000 hours.¹

Product Categories

Within the energy management market, many product categories are growing. Ranging from lighting to building automation, electrical distributors and manufacturers can develop many new selling opportunities.

Lighting: *Light Emitting Diodes (LEDs)*

The lifetime of lamps is a critical issue, since a major cost of lighting is labor for lamp replacement, particularly in larger institutional facilities.

LUMINOUS EFFICACY:

The energy efficiency of a light source measured in lumens per watt (lm/W)

LUMENS PER WATT:

The amount of light produced for each watt of electricity consumed by the light source

LEDs currently rival the energy efficiency of most white light sources. The issue is that no LED installation has been around long enough to verify the claim of expected useful life, which amounts to 6 years of uninterrupted use.² Further concerns have been expressed about the lifespan of the semiconductor drivers in LEDs. These drivers, in some cases, seem to have useful lives of about 6,000 hours.³

Municipal outdoor lighting is one of the main markets for LEDs. John Kurtzweil, Chief Financial Officer at [Cree](#) (a leading manufacturer of LEDs), recently commented on the activity in this market:⁴ "There's a lot of demand coming from outdoor lighting. Let me give you an example. The City of Anchorage is going to replace over 16,000 of its street lamps lighting roadways with LEDs. The largest segment of the market will come from this type of use at first. We're going after outdoor lighting as a primary market."

[LED City](#) is an organization focused on promoting LEDs across the full range of municipal lighting applications, including parking garages, architectural lighting, and streetlights. Several government and industry partners are behind the LED City initiative, including Cree.⁵

Light Source Luminous Efficacy Comparison⁶

Light Source	Typical Luminous Efficacy (lm/W)
Incandescent (no ballast)	10-18
Halogen (no ballast)	15-20
Compact Florescent (CFL, incl. ballast)	35-60
Linear florescent (incl. ballast)	50-100
Metal halide (incl. ballast)	50-90
Cool white LED (incl. driver)	47-64*
Warm white LED (incl. driver)	25-44*
*As of October 2007	

SALES TIP: BUILDING INITIAL LED SALES

- >> Inquire about local, municipal energy efficiency initiatives. Find out if these initiatives include using LEDs for outdoor lighting.
- >> CRS Electronics, another large LED manufacturer, offers an [online savings calculator](#) that could also be helpful in generating LED sales.

LEDs integrate more easily with lighting control systems because they contain semiconductors (computer chips). Unlike fluorescents, they do not contain any mercury.

However, there are several drawbacks to more widespread use of LEDs. Current issues include: price, color rendition, reliability in the field, and sales channel issues. These areas are likely to improve as the LED industry continues to develop.

“LED technology isn’t ready to displace linear fluorescent lamps as replacement light sources in recessed troffers for general interior lighting.”⁷”

In 2008, the U.S. Environmental Protection Agency (EPA) launched a major program to provide standardized testing and rating of LED lamps.⁸ However, most industry observers recognize that LEDs still have major drawbacks for more widespread use. As a result, LEDs will not replace CFLs and high-output T5 and T8 lamps anytime soon for more general lighting retrofit applications.

Fluorescent Lamps

Although demand is increasing for LEDs, fluorescent lamps are the mainstay of energy-efficient lighting sales for electrical distributors and manufacturers.

High Performance T8 lamps require 32 watts of power to produce 3,100 lumens (luminous efficacy ~ 97 lm/W). Reduced-Wattage T8s require anywhere from 25 to 28 watts, producing 2280 lumens (luminous efficacy ~ 81 lm/W).

High Performance T8s last about 24,000 hours, while Reduced-Wattage T8s last about 18,000 hours.⁹

Because T12s still account for the majority of lamps in use today (about 900 million lamps), major retrofit opportunities in supplying T8 and T5 lamps exist for distributors.¹⁰

In 2001, T12 lighting systems captured 60% of the fluorescent market while T8 systems captured 30%. The majority of T8s sold are first generation or 700 series, which aren’t as efficient as the High Performance or Reduced-Wattage T8s.¹¹



Less efficient fluorescents continue to make up the majority of lamps sold and used in existing buildings; in 2007, 63% of lamps in existing buildings were T12s.¹²

T5s are slightly more efficient than T8s. A four-foot T5 lamp runs on 28 watts and produces an average of 2,726 to 2,750 lumens (luminous efficacy ~ 104 lm/W).

A disadvantage of T5s is that they can produce glare in luminaires and therefore don't shield the light source from view.¹³ High Output (HO) T5s deliver more light than standard T5s and are available in higher wattages.¹⁴

Between 2003 and 2007 fluorescent lamp sales grew by 3.9%.

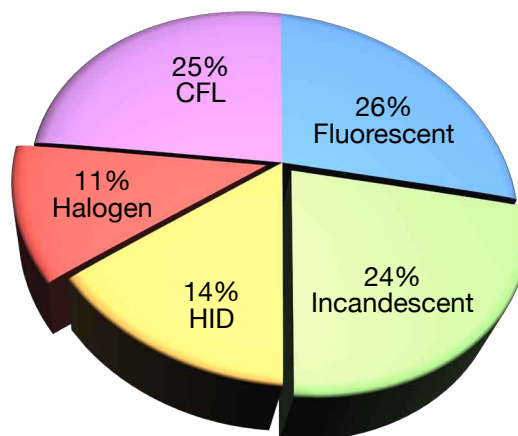
Fluorescent Lamp Sales 2003 – 2007 (in millions)¹⁵

Year	T12	T8	T5
2003	\$168	\$199	\$28
2004	\$161	\$226	\$37
2005	\$148	\$250	\$47
2006	\$160	\$274	\$64
2007	\$136	\$293	\$82

Did you know?

According to the National Association of Electrical Manufacturers (NEMA), fluorescent sales made up 26% of the \$2.9 billion U.S. lamp market in 2007.¹⁶

U.S. Lamp Sales, in Dollars, in 2007



SALES TIP: FLUORESCENT LAMPS

- >> Since the majority of fluorescents in use, T8 and T12 lamps, are less efficient than T5 lamps, this provides distributors with sales opportunities. In 2007, 63% of lamps in existing buildings were T12s. As distributors work with customers to help them become more efficient, replacing these T12s with T5s can equal significant energy savings.
- >> Another opportunity for distributors is in high-bay lighting. Energy-efficient T5s and T8s are increasingly used in place of the traditionally-installed metal halide lamps.¹⁷

Lighting Controls

In February 2009, the [Lighting Controls Association](#) (LCA), in partnership with [ZING Communications](#), conducted a survey of lighting designers, electrical engineers, and energy consultants addressing lighting controls used in newly constructed and existing office buildings. While occupancy sensors were the most recommended measure, bi-level switching was the most widely adopted measure.

In addition, scheduling or time-sweep controls were widely recommended; the most progressive professionals were specifying personal dimming controls. In addition, daylight harvesting is becoming more popular among lighting designers and electrical engineers.¹⁸

SURVEY SAYS

Occupancy Sensors Specified in:

55% NEW OFFICE CONSTRUCTION

53% OFFICE RETROFITS

Bi-Level Switches

Bi-level switching simply means having two light switches for a room rather than one. For example, one switch turns on one-third of the lights and the other controls the remaining two-thirds. For full lighting, both switches can be turned on. When less lighting is required, the switch that controls just one-third can be used.

Bi-level switching was the most widely adopted measure cited by LCA survey respondents in both new office construction and lighting retrofits.

“Survey respondents specified bi-level switching in 55% of new construction projects and 49% of retrofit projects.”

Survey respondents were also asked to rate various lighting control strategies based on how problematic they perceived them to be during operation. Respondents cited bi-level switching as the least problematic of all lighting controls installed during the past two years.²¹

Occupancy Sensors

Wall-box mounted occupancy sensors can replace light switches for lighting control in a specified area. Likewise, occupancy sensors in combination with light switches are appropriate when user overrides are desirable.

Occupancy sensors have at least a three-year payback in rooms that use more than 200 watts of lighting and are in use less than six hours a day.¹⁹ Occupancy sensors reduced energy use by approximately 30%.²⁰

OCCUPANCY SENSORS:

Use either ultrasonic or passive infrared sensor technology, or a combination of the two

COMBINATION TECHNOLOGY:

Sometimes referred to as dual technology, uses both passive infrared and ultrasonic sensing to reduce false trigger and false vacancy problems

SALES TIP: BI-LEVEL SWITCHES

- >> Bi-level switching is required to qualify a building energy upgrade for the federal Commercial Building Tax Deduction.
- >> The Commercial Building Tax Deduction was originally enacted by the Energy Policy Act of 2005. It was extended through December 31, 2013 under the Emergency Economic Stabilization Act of 2008.
- >> Find out more about the Commercial Building Tax Deduction at www.efficientbuildings.org.

Scheduling

Scheduling, or time sweep controls, automatically shuts lights off according to prescribed occupancy schedules. LCA survey respondents specified time sweep controls in 44% of new office construction and 30% of office retrofits. Time sweep controls were actually installed in 42% of new construction projects and 30% of retrofit projects.

“Time sweep controls reduced energy use by 23%.²²”

Dimming

Dimmer switches save energy when full illumination is not required. LCA survey respondents stated they specified personal dimming controls in 21% of new construction and 19% of retrofits. Dimming controls were actually installed in 18% of new construction projects and 15% of retrofit projects.

To dim fluorescent lamps effectively and reliably, dimmer switches must be tied into dimmable ballasts. High-efficiency electronic ballasts provide the same level of light output as standard electronic ballasts while using less energy. These ballasts reduce the lighting power required for florescent lamps by about 3 watts. NEMA has a [premium electronic ballast program](#) identifying the lighting industry's most efficient dimmable electronic ballasts.

DISTRIBUTOR SUCCESS STORY

Colonial Electric, King of Prussia, PA

[Colonial Electric](#) had a very successful experience putting Lutron's [EcoSystem](#)® lighting controls into a 52-story insurance company office building.

In a post-installation metered test, Colonial found that the lighting control system saved the company about \$0.50 per square foot per year.²³

Control Systems

Lighting control systems can be programmed to control a multitude of lighting circuits, each with its own set of time sweeps, daylighting variations, multiple levels, special-event scheduling, and manual-override capabilities. These systems are especially useful when multiple zones require varying time-sweep controls.²⁴

Many lighting control systems use the Digital Addressable Lighting Interface (DALI), a digital protocol for controlling the components of a system, including electrical ballasts and dimmers. However, some lighting control systems are proprietary and do not use the DALI protocol.



Daylight Harvesting

Before the advent of electric lighting, daylighting was an important way to provide light inside the built environment. The increasing emphasis placed on energy efficiency and overall sustainability, along with an understanding of health and productivity benefits, has brought daylighting back to the forefront of interior lighting design.

DAYLIGHT HARVESTING:

The strategy of integrating electric lighting controls, and sometimes interior and exterior shades, with daylight. Shades are often required in conjunction with daylighting systems to reduce glare and solar heat gains.

When implemented properly, daylight harvesting can save energy and increase the quality of light inside a building.²⁵ All of the lighting controls described in the previous section can be used to adjust electric lighting levels based on the amount of daylight in a given space.

Advanced lighting control systems also incorporate daylight harvesting features. The [Lighting Controls Association](#) website offers free educational and product resources to help distributors and contractors understand the benefits of these systems.

The Energy Center of Wisconsin conducted a study to determine lighting and HVAC energy savings attributed to daylighting. Findings showed energy used for lighting was reduced by 32% and energy used for cooling was reduced by 25%.²⁶ The less light required, the less heat generated, resulting in a lower requirement for cooling.

Q & A

WILL DAYLIGHT HARVESTING BECOME THE NEXT REGULATORY MANDATE?

Daylight harvesting is required under California's Title 24 energy code and strongly encouraged in the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating system for green buildings.

Many observers expect the ASHRAE 90.1 – 2010 and 189.1 standards will include daylighting requirements as well.²⁷

It may not be long before other states follow California's lead.

SALES TIP: SKYLIGHTS

>> Turning off lights in response to adequate daylighting levels from skylights produces energy savings in warehouses of up to 70%.

—U.S. Department of Energy

Variable Speed Drives

The single largest end-use of electric power is the industrial motor. Variable Speed Drives (VSD) can vary the shaft speed to match the driven load. VSDs allow motors to speed up or slow down, appropriately meeting the energy demand or power requirements at any given time. In this way, a fan, pump or blower operates at optimum efficiency even at partial load conditions.

VSDs also allow motors to “soft start,” reducing power consumption and peak power demand, as well as mechanical stress on the motor and the equipment driven by the motor.²⁹

VSDs are particularly effective at improving HVAC efficiency because they meet the changing system needs of pumps and fans. VSDs are used for elevators, wastewater and water pumps, boiler fans, cooling towers, cranes, and conveyors. For a typical circulating pump, a VSD can reduce power consumption by as much as 70%.³⁰

Plug Load Controls

Another way to increase energy efficiency is to put office equipment on switches that can be turned off at night to reduce plug loads.

PLUG LOAD:

The electricity used by any device that gets plugged into electrical outlets

STANDBY POWER:

The electricity that devices consume to keep internal clocks and display lights running, even when they are not powered on

Even when they are turned off, plugged-in devices use vampire energy. For instance, cell phone chargers plugged into the wall still draw power even if they aren't charging a cell phone battery.

“Plug loads account for 9% of residential energy use³¹ and 20% of commercial energy use in the U.S.”³²

These devices can draw power through two types of standby modes: passive standby or active standby. An example of passive standby is the clock on a microwave oven. An example of active standby is a DVD display when it is programmed to record something.

Did you know?

Motors use 65% of industrial power because they typically run at constant or full speed even when it's unnecessary.²⁸

product shelf

- >> GreenSwitch™ is an innovative device for managing plug loads. Wall plugs and light switches throughout the home or office can be wirelessly controlled by the GreenSwitch, allowing users to control plug loads with one switch.
- >> The [Isolé Plug Load Control](#) (manufactured by WattStopper/Legrand) and [Smart Strip](#) are power strips that help reduce plug loads.
- >> [APC's Back-UPS power strips](#) are combination uninterruptible power supplies (UPS) and surge protectors featuring master and smart outlets. When a computer is plugged into the master outlet, the smart outlets are turned off when the computer goes into sleep mode or is turned off. This is an automatic way of controlling plug loads for computer peripherals. Occupancy sensors for vending machines are another means of controlling plug loads.



Building Automation Systems

Building Automation Systems (BAS) are a powerful tool for increasing the energy efficiency of a building. They can help building managers determine time of use and reduce energy use when the building is not occupied. For instance, a BAS could be programmed to shut off the lights when the security system is turned on.

BUILDING AUTOMATION SYSTEMS:

Computerized networks of devices designed to monitor and control mechanical and electrical systems in a building, also capable of managing and integrating HVAC, lighting, security, and communications systems³³

Mark Frankel, Technical Director at the [New Buildings Institute](#), offered insight on how a BAS can be used to help building managers and tenants reduce their energy consumption:³⁴ “Simple controls are often adequate, even in complicated buildings. It takes four measurements to compare consumption across different buildings: temperature, occupancy and base loads, lighting

run times, and total energy use. These key performance indicators determine whether you need to go deeper to find inefficiencies.

Frankel continued, “What building controls and energy management systems should produce is actionable information for the designers, operators, and tenants. This doesn’t have to be real time data, but it should be more frequent than once a month or once a year.

“*It takes four measurements to compare consumption across different buildings: temperature, occupancy and base loads, lighting run times, and total energy use.*”

—Mark Frankel,
New Buildings Institute

“Building operators need to be able to compare the performance of their building to other buildings. Tenants don’t see data separated out for their part of the usage. They have no way of seeing the impact of their behavior. When they are comparing lease deals, they aren’t presented with building performance data.”



Smart Meters

Understanding how energy is used can help utilities and consumers save energy and money. For instance, in areas with peak pricing (higher electricity rates during peak consumption periods), smart meters and thermostats are used to communicate higher rates to the consumer.³⁵

SMART METERS:

Digital meters that communicate energy use information between utilities and consumers which allows utilities and energy users to access energy use information in real time

The consumer then has the option to lower the air conditioning or turn off appliances during higher energy rate periods. If consumers respond by reducing their energy demands, utilities can avoid bringing higher-cost “peaker plants” online to generate extra power.

Peaker plants impose significant costs on the utilities, because even though they are idle for most of the year they must be ready to be brought online the moment demand begins to outpace supply.³⁶

When fewer peaker plants are brought online, this reduces energy use and saves money.

For More Information

Smart Meters will be an integral component of the Smart Grid.

To learn more, refer to the Smart Grid section of NAED’s *The Green Market: Trends, Breakthroughs, & Business Opportunities Findings In Brief*.

product shelf

- >> The [ZigBee Alliance](#) certifies a range of smart meters that are wireless for residential, commercial, and industrial applications.
- >> [QuadLogic](#), which sells primarily to the commercial and industrial markets, offers a line of smart meters that communicate over existing power lines.³⁷



Renewable Energy

The stimulus packages that Presidents Bush and Obama signed in 2008 and 2009, respectively, included significant tax incentives and funding for renewable energy. Tax incentives and funding mechanisms will increase demand for solar, wind, and geothermal systems.

Tax incentives and funding mechanisms will increase demand for solar, wind, and geothermal systems.

According to Scott Sklar, President of The Stella Group, Ltd. (a renewable energy strategic marketing and policy analysis firm), the distribution channel for renewables is still weak.

"The distribution channels for all renewables are strained right now, because the industries are young," said Sklar.

“Distribution [for the renewables industry] is a weak link at the moment.”

—Scott Sklar,
The Stella Group

"A lot of distributors are coming in and saying we've done this for the HVAC industry, and we want to play that out with the renewable industry. So I think distribution is going to get better, but it's a weak link at the moment."³⁸

For More Information

On incentives and funding, as well as renewable energy market growth, please refer to the Renewable Energy section of NAED's *The Green Market: Trends, Breakthroughs, & Business Opportunities Findings In Brief*.

DISTRIBUTOR SUCCESS STORIES

■ **Border States Electric Supply, Fargo, ND**

Electrical distributors are also beginning to sell wind energy systems and components. [Border States Electric Supply](#) is particularly active in the grounding aspects of utility scale wind projects.³⁹

■ **Green Mountain Electric Supply, VT**

[Green Mountain Electric Supply](#) (GMES) recently began providing pre-engineered and pre-assembled [solar](#) packages. GMES also provides site evaluation, installation, and rebate filing services.⁴⁰

■ **J.H. Larson, Plymouth, MN**

[J.H. Larson](#), located in Minnesota and Wisconsin, has had success selling geothermal systems. Larson's customers want to have geothermal heat pumps despite a long-term payback.⁴¹

■ **Solar Depot, Petaluma, CA**

The [Solar Depot](#), based in Petaluma, California, offers a [cost-savings calculator](#) on their website as well as a sophisticated [online product catalog](#).

■ **Southwest Windpower, Flagstaff, AZ**

[Southwest Windpower](#) offers smaller scale (up to 40KW) wind packages for commercial and residential applications. They also offer [introductory webinars](#) on their website and installation certification courses.

Energy Management Services

In addition to providing the right products for energy efficiency projects, many distributors are offering various energy management-related services like: audits, installation, financing, energy savings verification, and incentive or rebate filing.

These services allow distributors to sell more products, and they differentiate distributors as energy management solution providers, rather than just order takers.

Audits also generate word of mouth, establishing distributors who offer these services as a “go- to” resource. Energy services add value to energy efficient product offerings and produce comprehensive energy management solutions for end users.

Lighting and energy audits lower expenses for customers and generate sales.

Lighting and Energy Audits

In February 2009, NAED surveyed its membership to gain a better understanding of its involvement in selling energy management solutions.* A majority of survey respondents, 59% stated they have a formal procedure for assessing their client’s energy management needs, like an energy or lighting audit.⁴²

Mike Lindner, the Energy Manager at Eoff Electric Co., a division of Sonepar USA, in Portland, Oregon, described how the company conducts energy audits.⁴³

“We go to a customer and say...this is your return on your investment.”
—Mike Lindner, Eoff Electric

“We mostly focus on lighting. We also do energy audits. We work closely with the [Energy Trust of Oregon](#). They offer rebates for energy management projects and the State of Oregon offers tax credits.

“We go to a customer and say, ‘This is what we recommend, this is what your savings will be, this is what your total cost will be given the rebates/ tax credits available to you, and this is your return on the investment.’ The project proposal includes all the payback calculations.

* Responses were self-selected, so data does not necessarily apply to the entire electrical industry.

energy upgrade cost calculation

Material and Labor Costs



Recycling or Material Disposal Costs



Incentives, Rebates, and Savings



Cost of Proposed Lighting and Energy Upgrades

Lindner continued: “The Energy Trust of Oregon provides many of the parameters for the proposals, like the projected energy use for lamps and fixtures. The Energy Trust also has strict guidelines on what the payback has to be in order to get rebates. That builds trust with the customers.”

Lindner cautioned distributors to establish a written understanding with the customer before an audit is conducted.

“In some cases, when conducting an energy or lighting audit, the client has approved the money and filled out the paperwork. Then, the client will tell you they are putting the project out for bid.

“*Having a written agreement [for audits] stating the client will reimburse you for your effort protects you.*”

“If you’re doing all the legwork on an energy or lighting audit, having a written agreement stating the client will reimburse you for your effort protects you if the client puts the project out for bid, and you don’t get the contract,” Lindner said.

For More Information

On the legal aspects of energy audits, please refer to page 16 of NAED’s research report, *Service Liability Exposure: Navigating the Legal Risks and Protections*.

Typical lighting and energy audits include such inputs as:

- **Total** material and labor
- **Recycling** or material disposal costs
- **Federal**, state, municipality, and utility incentives and/or rebates
- **Annual** utility savings—divided into subcategories from efficient lighting and reduced air conditioning:
 - **Energy** rates and/or expenditures
 - **Input** wattage of original lamps
 - **Input** wattage of replacement lamps
 - **Number** of lamps
 - **Wattage** per square foot
 - **Number** of hours in use per year
 - **Cost** of energy per kilowatt hour
- **Annual** maintenance savings
- **Total** savings (sum of utility and maintenance)
- **Simple** payback in years
- **Return** on Investment (ROI)
- **Financing** charges

SALES TIP: ENERGY AUDITS

- >> Highlighting payback and ROI helps potential customers understand the project will save them money in the long run.
- >> Offer financing options to help the customer move forward with the project without competing for dwindling capital improvement funds.
- >> Establish a written agreement, so you are reimbursed for your effort if the project is put out for bid.

Installation

Partnering with contractors trained to install lighting controls systems or renewable energy systems can help distributors differentiate themselves as the source for energy management solutions. 58% of NAED survey respondents offer installation options.^{† 44}

Offering installation options is another great method for selling energy management projects.

Financing Options

Financing options can make energy management projects more attractive to potential customers and help them overcome the initial cost barrier. NAED survey respondents cited initial cost and/or financing of energy management improvements as the biggest barrier to selling energy management solutions.^{† 45}

Doug Borchers, Vice President of Sales & Engineering with [Dickman Supply](#), Inc. in Sidney, Ohio, described their approach to financing:

"We offer the financing option through a local bank who has taken the time to understand this opportunity. If a potential customer has no budget for capital expenditures, then we put them in touch with the bank, which handles the financing details.

"The bank either provides loans or structures an operating lease where the bank carries the product on their books and then releases ownership once the project financing has been paid back."

Mike Mennis, Regional Marketing Manager, Western U.S., [Siemens Energy & Automation, Inc.](#), explained, "Older equipment is more costly to maintain, and a lot of facilities people are concerned about [the performance of] old equipment. So we work maintenance figures into the savings financing numbers."

[†] Responses were self-selected, so the data does not necessarily apply to the entire electrical distribution and manufacturing industries.

LIABILITY TIP: RENEWABLE ENERGY INSTALLATIONS

- >> Eoff Electric Supply leverages contractor relationships to get labor estimates for their project proposals and for installation options.
- >> Scott Sklar, President of [The Stella Group](#), recommends that companies wanting to buy PV and wind systems check out the installers. He said, "Get pictures of installations they've done before, and get referrals. If they don't have a book with at least ten of their installations you can look at, then don't use them.
- >> Sklar also suggests that companies make sure their installers go through a manufacturer's training course, especially if they are recommending a certain technology, like wind turbines from [Southwest Windpower](#) in Arizona.
- >> With solar water heating, Sklar says that installers need the [Solar Rating and Certification Corporation](#) (SRCC) certification or something comparable. Aside from using solar panels with UL listings, for PV they should have the [North American Board of Certified Energy Practitioners](#) (NABCEP) certification for installation.

“NAED survey respondents cited initial cost and/or financing of energy management improvements as the biggest barrier to selling energy management solutions.”



Energy Savings Verification

Under some energy project contracts, such as Energy Savings Performance Contracting (ESPC), the energy service provider is required to measure and provide verification of the energy savings. Energy verifications provide customer reassurance that the energy project proposal is delivering on its promises.

Energy service providers, facility managers, and building owners also follow measurement and verification guidelines to determine whether or not energy savings are actually achieved. Energy service providers should inspect facilities periodically to look for unrelated changes to the facility which may diminish energy performance. In addition, some incentives and rebates also require energy saving measurement and verification.

“Energy verifications provide customer reassurance that the energy project proposal is delivering on its promises.”

For More Information

- >> The U.S. Department of Energy's [Federal Energy Management Program \(FEMP\)](#) developed a [Measurement and Verification Guideline for Federal Energy Projects](#) to help with energy use comparisons. This guideline can be scaled depending on the complexity of the energy project.
- >> The [Efficiency Valuation Organization's International Performance Measurement & Verification Protocol](#) (IPMVP) provides guidelines to measure systems in isolation or conduct whole building comparisons.
- >> The [ENERGY STAR® Portfolio Manager](#) gained wide acceptance as an effective way to identify baseline energy use and efficiency increases over time.

Performance Guarantees

Energy Service Companies (ESCOs) sometimes offer performance guarantees. The ESCO guarantees the installed energy products and performed services will generate a specified amount of energy savings over time.

The ESCO then designs, constructs, and obtains the necessary up-front funding for the energy savings project. The end user makes payments for the project over time with a specified portion of the money saved on their utility bills.

“Performance guarantees are a popular method to verify energy savings.”

The [University of Buffalo](#) is well known for their energy savings, largely due to the work of Walter Simpson, the recently retired Director of the Green Office. Simpson was involved with three different comprehensive ESCO projects, none of which involved performance guarantees.

Simpson discusses why the university chose against having a performance guarantee in their projects: “We were convinced that the promised savings would be realized if we carefully scrutinized the design of the proposed energy conservation measures and verified the savings calculations. After the first project was completed, we used measurement and verification procedures to verify savings and found that they were achieved.”

Q&A

WHAT ARE THE PROS AND CONS OF PERFORMANCE GUARANTEES?

“The performance guarantee is a great idea and is sometimes required due to legislation, customer preference or other reasons. For standalone lighting projects, it’s not uncommon to see guarantees in the form of load reduction or a reduction in the kW, as opposed to the kWh guarantee tied to long-term measurement and verification.

“However, to manage a guarantee, monitoring and verification is required. This requires engineering time, site visits, and utility bill reviews, all of which add cost.

“Energy efficiency projects involving only lighting don’t usually involve long term monitoring and verification or financial guarantees. Compared to other technologies, lighting savings are fairly simple to forecast and measure. As a result, some end users forego measurement and verification to save costs.”

—Brad Jenkins, National ESCO Sales Manager with [OSRAM SYLVANIA](#)

Incentive Paperwork and Rebate Filing

End users are sometimes intimidated by the incentive and rebate paperwork required to take

“The majority of NAED survey respondents use utility, state, and federal incentive information as sales aids for energy management projects.”

advantage of the benefits they offer. One way around this is to sweeten energy project deals by offering to complete the required paperwork.

BriteSwitch is a company that fills out the incentive paperwork for end users so they can take full advantage of energy efficiency incentive programs.

Leendert Jan Enthoven, the company's founder and president, explains the service opportunities, “A lot of money is available for energy efficient lighting, but most people don't actually use it; they think it's too complicated or takes too much time. And, many incentives and tax deductions require a great deal of lighting expertise. I noticed manufacturers and distributors experienced the same problems as end users, so I made a business out of this need.”

DISTRIBUTOR SUCCESS STORY

Eoff Electric Co., Portland, OR

Mike Lindner, the Energy Manager at [Eoff Electric Co.](#), a division of Sonepar USA, explained how they decided to offer incentive and rebate paperwork services:

“In the past, we put proposals out and showed potential customers how much they could save, but our success rate was pretty low. We found customers didn't want to deal with all the incentive paperwork. So we asked ‘Why don't we do it?’

The State of Oregon Department of Revenue and the Energy Trust of Oregon have forms that need to be filled out in order to get the rebates. We formed relationships with the Energy Trust and the State of Oregon, so we know whom to call when a problem comes up. That really led us to put the whole package together, so the customer just has to sign on the dotted line.”

SALES TIP: SERVICE OPPORTUNITIES

>> *State and utility rebates*

BriteSwitch helps end users locate applicable incentives through a database of energy efficient lighting rebate information, gathered from across the U.S. This is especially useful for national accounts.

>> *End user tax deductions*

Under the [Energy Policy Act](#) (EPAAct), up to \$0.60 per square foot is potentially available for lighting. This can accumulate to very substantial amounts, but the requirements can be difficult to understand. BriteSwitch helps optimize lighting design, performs all the necessary calculations, and provides the end user with all paperwork required to file for the tax deduction.

For More Information

The [Database of State Incentives for Renewables & Efficiency and the Tax Incentives Assistance Project](#) are comprehensive websites. These websites are designed to give end users and businesses the information they need to make the most of energy efficiency incentives offered by utilities, municipalities, states, and the federal government.

Conclusion

Looking ahead, the market for energy management solutions is on pace to continue growing. Government incentives, the explosive growth of green initiatives, and the increasing focus on corporate sustainability will continue to fuel this market. But with growth, comes competition. Are electrical distributors and manufacturers ready to battle new competitors for this emerging market?

With the products and services outlined in this brief, NAED members can take advantage of the growing energy efficiency market. NAED's *Selling Energy Solutions Case Study Series* details current purchasing trends in different customer segments, as well as how to approach these customers and close the sale.

“*Institutional, utility, government, and commercial market segments are interested in reducing their energy use and greenhouse gas emissions.*”

Demand for energy management solutions will surely increase given the record amount of incentives and funding included in the American Recovery & Reinvestment Act (ARRA), passed by Congress in February 2009. This trend will accelerate in the years ahead. Electrical distributors should begin gearing up to take advantage of it.

Next Steps

To expand your energy management market knowledge, learn which customers to target and which business models are best suited for providing energy services. NAED's *The Green Market: Trends, Breakthroughs & Business Opportunities Findings In Brief* provides a comprehensive analysis of energy services end users and business models.



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