



NATIONAL ASSOCIATION OF  
ELECTRICAL DISTRIBUTORS

Smart Tools for Smart Distribution®

# Going Green Inside and Out: Findings in Brief

## The Green Market: Trends, Breakthroughs & Business Opportunities

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### Introduction

Energy management and energy efficiency in the built environment are growing in prominence due to economic issues, energy price volatility, global warming concerns, and national security considerations. For more than a quarter-century, demand for electricity steadily outpaced supply and transmission capacity. Growth in peak demand for electricity exceeded transmission growth by almost 25% every year since 1982.<sup>1</sup>

Electric utilities have addressed this gap through demand-side management, increases in peak-period prices, and other energy efficiency programs. State governments have provided energy efficiency programs and incentives.

As providers of capital and expertise, Energy Services Companies (ESCOs) have been a major provider of energy management and efficiency services. However, as the market grows, more opportunity exists for additional companies to offer energy services and products. Electrical distributors are positioned to expand business as providers of energy management solutions. Distributors have strong relationships with the contractors and end users who install energy efficient electrical products. In addition, distributors also have a developed understanding of how to improve the energy efficiency of their customers' buildings.

This brief will investigate growth in energy management and efficiency markets, while also profiling an increasing number of demand-side management programs. Renewable energy systems, plus the growth of the Smart Grid and carbon markets are also accelerating the expansion of energy management and efficiency markets. These trends provide electrical distributors with new opportunities to meet the nation's growing demand for energy management solutions.



## Current Market Data

Since the energy management market is in a growth period, it's important to examine current markets to discover the best opportunities. In this section, this brief will highlight the players in this market as well as market research and trends.

Energy management is a continuous planning process often employed by facilities managers and other sustainability professionals to use energy more efficiently. Energy management information systems (EMIS) are often key tools for decision-making; between 2003 and 2006, global EMIS revenues grew from \$10.4 billion to \$17.6 billion, a 69% increase.<sup>3</sup>

The emphasis on energy management in the U.S. reflects a worldwide trend towards clean energy. For example, a report from the international non-profit [World Economic Forum](#) estimates that total new investment in clean energy worldwide rose 4.4% during the course of 2008 and exceeded \$150 billion.<sup>2</sup>

“Between 2003 and 2006, global EMIS revenues grew from \$10.4 billion to \$17.6 billion, a 69% increase.”

### Areas of Potential Revenue and Profit Growth for Electrical Distributors and Manufacturers:

- ✓ Building sector
- ✓ Energy Management Information Systems (EMIS)
- ✓ Renewable energy
- ✓ Energy Service Company (ESCO) activities

#### CLEAN ENERGY:

*Encompasses energy efficiency, renewable energy, the Smart Grid, and systems and actions to reduce greenhouse gas (GHG) emissions*

#### ENERGY MANAGEMENT INFORMATION SYSTEMS (EMIS):

*Monitor energy use in a building and collect data to aid in making energy management decisions*

## RESEARCH FINDINGS: U.S. INVESTMENT IN ENERGY

FROM THE 2004 [American Council for an Energy-Efficient Economy \(ACEEE\) STUDY:](#)

- >> \$300 billion was invested in energy efficiency technologies and infrastructure.
- >> Approximately 14.3% of total efficiency investments, or \$43 billion, were associated with an efficiency premium, which is the difference in investment costs between more efficient and less efficient goods and services.\*
- >> 60% of the efficiency premium, or \$24.2 billion, was invested in the buildings sector, even though buildings only account for about 40% of total energy consumption in the U.S.<sup>4</sup>

\* A consumer or business deciding to invest in more energy-efficient equipment must pay for the total cost of the equipment, which can be allocated into two parts: the cost of new equipment (the base cost) plus the cost of the added efficiency (the efficiency premium). The base cost plus the premium equals the total investment.

## Demand Side Management

Utilities use demand side management (DSM) programs to reduce power demand during peak use periods—typically summer afternoons—but also for energy use in general. During peak-demand periods, utilities must bring higher-cost “peaker plants” online to generate extra power.

According to the U.S. [Energy Information Administration](#), DSM expenditures increased from \$2.1 billion in 2006 to \$2.5 billion in 2007, a one-year increase of 23.2%. Since 2003, nominal DSM expenditures have increased by an average of 18.1% annually. Utilities reported peak load reductions of 30,276 MW from DSM programs in 2007, an increase of 11.1% from 2006 peak load reduction levels.<sup>5</sup>

## Energy Service Companies (ESCOs)

Numerous factors are driving the growth of the U.S. ESCO market, primarily federal and state emphasis on energy conservation and efficiency. Awareness among end users is also growing. Energy management investments are being fueled by energy price volatility and the percentage of office operating costs created by energy consumption. Nearly one-third of typical office building operating costs are for energy, which is why investments in efficiency are highly regarded, even when capital for these investments isn't always available.

ESCOs provide access to funding and technical expertise to help end users make the most cost-effective efficiency investments. The ESCO industry has long been recognized for its ability to deliver energy efficiency and related energy services to end users in large and medium-sized facilities.

### ENERGY-SAVING PERFORMANCE CONTRACTS (ESPC):

*The contractor guarantees that the energy products installed and services performed will generate a specified energy savings over time. The contractor designs, constructs, and obtains the necessary up-front funding for the energy savings project, and the end user makes payments for the project over time with a specified portion of the money saved on their utility bills. These payments represent the ESCO's return on investment.*

## Did you know?

Peaker plants increase the cost of power during peak energy demand periods; although idle for most of the year, they must be constantly ready to be brought online.<sup>6</sup> These plants typically use natural gas or oil, pollute more, and are more costly to operate and maintain than a utility's base load coal, nuclear, or hydro plants.

### THE ESCO MARKET: 1990s—2000s

[Lawrence Berkeley National Laboratory \(LBNL\)](#) and the [National Association of Energy Service Companies \(NAESCO\)](#) conducted a survey of 46 ESCOs in 2007 to obtain details on [the size and characteristics of this market](#).<sup>7</sup>

- 1 Throughout the 1990s, the study revealed that the ESCO market saw 20% annual growth.
- 2 The period between 2000 and 2004 saw only 3% annual growth due to stalled retail competition, fallout from the Enron bankruptcy, a sunset in federal energy-saving performance contracting (ESPC) legislation, and industry consolidation.
- 3 The market recovered between 2004 and 2006, achieving 20% annual growth again. Several factors led to renewed growth during this period, including rising energy prices, increasing end user interest in reducing energy use due to climate change concerns, reauthorization of ESPCs, the number of federal agencies adopting aggressive energy savings goals, and an increasing number of utility ratepayer and public-benefits funded energy efficiency and renewable energy projects.<sup>8</sup>



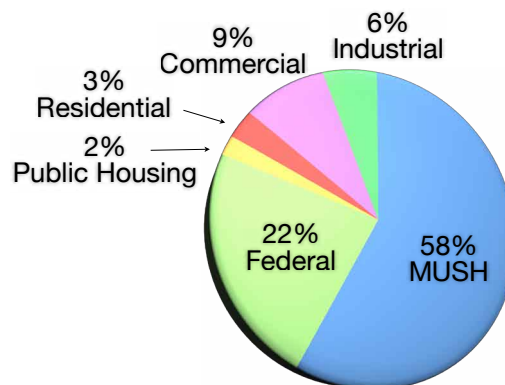
A 2006 study estimated ESCO industry revenues at approximately \$3.6 billion. This figure was divided into the following service categories:<sup>9</sup>

- Energy efficiency (\$2.5 billion, or 73%)
- Renewables or on-site power generation (\$600 million, or 16%)
- Consulting/master planning and other services (\$400 million, or 11%)

The same study estimated that institutional facilities represented the vast majority of ESCO customers (over 80%). Institutional facilities include federal buildings, municipal buildings, universities, schools, hospitals (collectively referred to as MUSH in the figure to the right), and public housing authorities. Private sector customers included commercial, industrial, and residential facilities.

The following figure illustrates the percentages of ESCO revenues from these market segments:<sup>10</sup>

**2006 ESCO Industry Revenues by Market Segment**



**INDEFINITE DELIVERY / INDEFINITE QUANTITY (IDIQ):**

*A type of contract that provides for an indefinite quantity of supplies or services during a fixed period of time*

A significant factor in ESCO growth is the renewal of federal ESPCs. Most recently, the U.S. Department of Energy awarded 16 Indefinite Delivery / Indefinite Quantity (IDIQ) ESPCs in December 2008. These contracts could result in up to \$80 billion in energy efficiency, renewable energy, and water conservation projects.<sup>11</sup>

These projects are a potential sales bonanza for electrical distributors, as the spending for these contracts alone is more than two times what will be spent on energy efficiency through President Obama’s entire stimulus package (see next section on Future Growth). Electrical distributors and manufacturers could supply products to the ESCOs that were awarded contracts.

The IDIQ approach allows individual federal agencies to negotiate “task orders” with any of the ESCOs without further public bidding. In practice, an agency might ask two or three ESCOs to prepare energy audits or analyses of upgrades and then issue a task order to the low bidder. For distributors to stay on top of this market, closely monitor each ESCO active in your market area and possibly participate in audits for facilities with which you are familiar.

Current market data describing energy efficiency investments in the building sector, EMIS, global clean energy, demand side management, and ESCOs are of particular interest to the electrical distribution industry because of its unique position to supply products and services to these growing markets.

*“These projects are a potential sales bonanza for electrical distributors... the spending is more than two times what will be spent on energy efficiency through the entire stimulus package.”*

Distributors have strong relationships with electrical contractors and a good understanding of end-use customers’ energy efficiency requirements and purchasing habits.

**RESEARCH FINDINGS**

**2009 NAED ENERGY MANAGEMENT SOLUTIONS SURVEY:**

- >> 70% of respondents are currently involved in selling energy management solutions
- >> Average energy management project represented a sale of \$60,913
- >> 32% of respondents stated margins on energy management sales were above average
- >> 53% of respondents stated margins were average
- >> 53% of respondents expect future energy management market growth to grow by 5 to 15% annually in 2009 and 2010.<sup>12</sup>

**ESCOs Awarded Federal IDIQ Energy-saving Performance Contracts (ESPCs) in December 2008**

- >> Ameresco, Inc., Framingham, MA
- >> Chevron Energy Solutions, Eagan, MN
- >> Clark Realty Builders, Arlington, VA
- >> Consolidated Edison Solutions, White Plains, NY
- >> Constellation Energy Projects & Services Group, Inc., Baltimore, MD
- >> FPL Energy Service, Inc., North Palm Beach, FL
- >> Honeywell International, Inc., Golden Valley, MN
- >> Johnson Controls Government Systems, LLC, Milwaukee, WI
- >> Lockheed Martin Services, Inc., Cherry Hill, NJ
- >> McKinstry Essention, Inc., Seattle, WA
- >> NORESCO, LLC, Westborough, MA
- >> Pepco Energy Services, Arlington, VA
- >> Siemens Government Services, Inc., Reston, VA
- >> TAC Energy Solutions, Seattle, WA
- >> The Benham Companies, LLC, Oklahoma City, OK
- >> Trane U.S., Inc., McEwen, TN

## Future Growth

With the newly passed American Recovery & Reinvestment Act (ARRA), Americans can expect to see billions of dollars invested in energy efficiency. A large portion of the government spending will focus on improving energy efficiency in buildings, opening many new opportunities.

The ACEEE study established an energy efficiency investment baseline to compare with other investment and funding initiatives. This figure (\$24.2 billion in efficiency premiums in the building sector alone) provides some perspective on the American Recovery & Reinvestment Act (ARRA), signed into law by President Obama in February 2009.

The ARRA provides approximately \$75 billion in potential funding for energy efficiency, renewable energy, and the Smart Grid, out of a total \$787 billion in economic recovery spending programs. About \$26 billion will focus on energy efficiency related improvements, mostly in buildings.<sup>13</sup> This

“*These programs will lead to a considerable increase in demand for energy management products and services.*”

record amount of funding and tax incentives will be the largest determinant of energy management market growth over the next several years.

ARRA funds will be distributed over the next two to three years because the goal is to stimulate the economy in the short term. The funds will be channeled through federal and state agencies. [Recovery.gov](http://Recovery.gov) enables taxpayers to track how these funds are being spent and the opportunities arising as a result of the spending. Energy efficiency-related spending will occur through both direct and indirect funding mechanisms.

ARRA programs indirectly related to or partially funding energy efficiency objectives include:<sup>14</sup>

- Advanced energy research & development (\$400 million)
- [General Services Administration’s High-Performance Federal Buildings program \(\\$4.5 billion\)](#)
- Green Jobs (\$500 million)
- Retrofits, grants, and loans for federally-assisted housing (\$2.5 billion)
- Smart Grid investments (\$4.5 billion)

These funding programs, along with many other private-sector initiatives, will lead to a considerable increase in demand for energy management products and services.

Detailed information about how energy efficiency-related stimulus funding

is being spent at the state level can be found by contacting State Energy Programs (SEPs).

### STATE ENERGY PROGRAMS (SEPs):

*Provide grants to states and direct funding to state energy offices from technology programs in DOE’s Office of Energy Efficiency and Renewable Energy*

## Did you know?

In 2008, SEPs received \$44 million in funding, so the stimulus package will provide a monumental increase for these programs.

As a condition of the stimulus funding guidelines, SEPs must establish and enforce energy efficiency building codes and standards. The code for residential buildings must meet or exceed the most recently published International Energy Conservation Code. The code for commercial buildings must meet or exceed ANSI/ASHRAE/IESNA standard 90.1-2007.

To ensure efficiency guidelines are met, the SEP funding will be distributed as follows:<sup>15</sup>

- 10% of funding released at time of initial award
- 40% upon DOE approval of state plan
- 20% upon demonstration by the state that 50% of funds have been obligated
- Remainder (30%) upon showing of continued progress

**The programs most directly related to energy efficiency are as follows:<sup>16</sup>**

1

**State Energy Programs (\$3.1 billion)**

State Energy Programs (SEPs) were formed in response to the energy crisis of the 1970s. These offices focus on renewable energy supplies, appliance and building efficiency, and related energy demand reductions and attempt to reduce the environmental impacts of energy use.<sup>17</sup>

2

**Energy Efficiency and Conservation Block Grants (\$3.2 billion)**

Energy Efficiency and Conservation Block Grants (EECBG) have been allotted \$3.2 billion. \$2.8 billion will be distributed directly. The remaining \$400 million will be distributed through a competitive program among state, local, and Native American tribal entities.

***\$2.8 billion in grants will be distributed:***

- 68% directly to more than 1,700 larger cities in the U.S.
- 16% through the states to counties of less than 200,000 people and towns with populations less than 35,000
- 12% directly to state energy offices for SEPs
- 2% for competitive program
- 2% available to Native American tribes

These grants can be used for ESPCs, on-bill utility financing, revolving loans, loan guarantees, and other financial incentives and mechanisms.<sup>18</sup>

[Click here](#) to view state and local grant allocations though the EECBG program.

3

**Weatherization Assistance Program (\$5 billion)**

The Weatherization Assistance Program provides assistance to low-income families in weatherizing and improving the energy efficiency of their homes. This program provides free services to approximately 100,000 households per year.<sup>19</sup>

[Click here](#) for the 2009 Recovery Act and Weatherization Funding website.

4

**Matching Funds for ENERGY STAR® Appliance Rebates (\$300 million)**

The ENERGY STAR® appliance rebate program requires adopting states to put up 50% in matching funds; it will spur sales of energy efficiency appliances.<sup>20</sup> (Neither of these programs is likely to result in sales for electrical distributors other than perhaps bulk sales of compact fluorescent lamps to low-income projects.)

**For More Information**

- » The [National Association of State Energy Officials](#) (NASEO) provides [a listing of State Energy Offices and affiliates](#).
- » The [National Association of Electrical and Medical Imaging Equipment Manufacturers](#) (NEMA) also provides a [website with links to state and local stimulus package resources](#).

## Market Trends

The stimulus funding is a product of the Obama Administration’s policy to achieve economic recovery partially through clean energy. This effort encompasses expanding renewable energy, building a smart grid, and reducing greenhouse gas emissions through growth in overall energy efficiency. Current trends in these markets also suggest increasing opportunities for the electrical industry.



### Renewable Energy

Both the Bush and Obama Administrations significantly incentivized renewable energy. The Congress extended the Investment and Production Tax Credits (ITC and PTC), in 2005 and 2006, and approved the Emergency Economic Stabilization Act (EESA) in late 2008. The U.S. Congress gave the PTC another three-year extension. It also expanded the ITC beyond solar energy projects, making it accessible to all forms of renewable energy under the 2009 ARRA.

The ARRA also provides \$16.8 billion in direct spending for renewable energy and energy efficiency programs during the next 10 years. The ARRA includes a grant program and a loan guarantee program for renewable energy developers and manufacturers.<sup>21</sup>

Increased funding and demand for solar, wind, and geothermal energy systems will provide the electrical industry with unique opportunities to supply these growing markets. Rexel, a leading worldwide electrical distributor, reported between \$150 million and \$250 million in renewable energy sales with “over-average” growth.<sup>22</sup>

“Increased funding and demand for solar, wind, and geothermal energy systems will provide the electrical industry with unique opportunities to supply these growing markets.”

## Solar

Scott Sklar, President of The Stella Group, Ltd., a renewable energy marketing and policy analysis firm, described funding mechanisms instrumental to the expanded use of renewables,<sup>23</sup> “The main tools are tax credits, state grants, and renewable portfolio standards. The December 2008 stimulus bill included an eight-year extension of the solar tax credits. The bill extends the 30% Investment Tax Credit (ITC) for solar energy property for eight years, until 2016, with five years of accelerated depreciation. This is the best thing to help businesses use solar.”

According to Sklar, 17 states have clean energy public benefit trust funds, which are built through small charges on the ratepayer’s electricity bill. These funds add up to a couple of billion dollars a year and can be accessed by both residences and businesses as grants for solar installations.

He explains, “More than 20 states have renewable energy portfolio standards, meaning the utilities get a certain payment or rate for green power. President Obama is proposing to make this a national program. If you blend these tools together, the payback calculation can be compelling.”

According to the [Solar Energy Industries Association](#) (SEIA), 342 megawatts (MW) of photovoltaics (PV) were installed in 2008. Of this, 292 MW were tied to the grid while 50 MW were off-grid. This represents an 81% growth rate over the 161 MW of grid-tied installations in 2007. Overall, U.S. total installed grid-tied PV capacity

broke the 1-gigawatt (1,000-megawatt) barrier in 2008, the equivalent power of a large coal or nuclear power plant.<sup>24</sup>

Despite the relatively large federal tax incentives and local utility rebates available, the solar payback horizon is relatively long, typically about 15 to 20 years.

On-site solar power generation can provide “green” marketing opportunities and can also protect against energy price volatility, blackouts, and brownouts.

“*Total U.S. installed grid-tied PV capacity broke the 1-gigawatt barrier in 2008, the equivalent power of a large coal or nuclear power plant.*”

## Did you know?

Tens of thousands of jobs are currently provided by the solar industry; these numbers will grow as demand for solar increases due to increased funding and incentives.

In fact, the average solar company reported increasing its payrolls by over 70% from 2007 to 2008, either manufacturing, installing, or maintaining PV.<sup>25</sup>

## The Emergency Economic Stabilization Act of 2008 (EESA):

These directives provided much needed long-term stability for solar investments.<sup>26</sup>

- **Extended** the 30% solar Investment Tax Credit (ITC) for eight years
- **Lifted** the \$2000 credit cap for residential PV installations
- **Allowed** application of the tax credits against the alternative minimum tax (AMT)
- **Removed** the prohibition against utilities’ use of the ITCs

## Wind

The extension of the PTC through 2012 and increased flexibility for the use of the ITC under the ARRA are a boon to the wind industry. Under the PTC, an income tax credit of 2.1 cents/kWh is allowed for the production of electricity from utility-scale wind turbines. The [American Wind Energy Association](#) (AWEA) reports that 1,300 MW of wind energy was installed in the third quarter of 2008, bringing total installed capacity to 21,017 MW in the U.S.

## Geothermal

Geothermal, which will also benefit from the increased applicability of the ITC under the ARRA, also continues to grow. [The Geothermal Energy Association](#) reports the U.S. is the world leader in geothermal capacity, with a total of 3,040 MW installed as of March 2009. In the U.S., geothermal accounts for 4% of the total renewable energy consumption. Installations can be found in Alaska, California, Hawaii, Idaho, Nevada, New Mexico, Utah, and Wyoming.<sup>27</sup>

## LEADING THE WAY

The U.S. is the world leader in wind electricity generation due to installed capacity and strong and reliable winds in several states, such as Texas and California.<sup>28</sup>

## Smart Grid

The electricity grid is one of the most significant technological achievements of the 20<sup>th</sup> century, but for the most part it still largely resembles its 19<sup>th</sup> century design. The grid is a centrally planned and controlled infrastructure that includes approximately 1 million megawatts of generating capacity and 5.7 million miles of transmission and distribution lines.

The ARRA legislation allocated \$4.5 billion for improvements. An [Electric Power Research Institute](#) (EPRI) analysis estimates Smart Grid improvements have vast potential to increase energy efficiency and reduce greenhouse gas emissions.

## GRID WOES

Surprisingly, grid operators have limited knowledge about what is happening along all those miles of lines.<sup>29</sup> In many areas of the country, the only way a utility or distribution provider knows about an outage is when a customer reports it.<sup>30</sup>

Not only is there low visibility within the grid, but there are also significant inefficiencies. Transmission and distribution losses amount to 230 million MWh, or 5.9% of net generation.\* Because electricity must be used the moment it is generated, peaker plants must be brought online during periods of the highest demand. As noted earlier, they impose significant costs on the system, because even though they are idle for most of the year they must be ready to be brought online at a moment's notice.<sup>31</sup>

As the U.S. population grows and the number of TVs, computers, and other home electronics grows even more rapidly, demand for electricity continues to rise. Although we want more electronics in our home, we don't want new power plants and transmission lines in our backyards. While adding new generation sites and transmission capacity would be a sizeable opportunity for electrical distribution, it does not address reliability issues concerning older equipment in the grid.

\* According to Electric Power Annual data from the Energy Information Administration, net generation in the U.S. was about 4,055 million megawatt hours (MWh) in 2005 while retail power sales during that year were about 3,816 million MWh. The difference is 230 million MWh, or 5.9% of net generation.

Areas of improvement most likely to affect the electrical distribution industry are two-way digital communications and integration of distributed generation sources or renewable energy. Two-way communications over the grid will allow utilities and consumers to interact more effectively. It will also provide operators increased awareness of power quality, brownouts, and blackouts.<sup>32</sup> Also, during peak periods, rate increases can be relayed to the consumer through smart home and office meters, thermostats, or appliances in real-time.<sup>33</sup>

**SMART GRID:**

*A series of improvements in the electricity supply chain that take advantage of open standards and wireless technologies, enabling integrated communications.*

The Smart Grid will also be capable of integrating renewable energy sources, unlike the current grid, which is challenged by the intermittent production of renewable energy. Advanced controls and communications, combined with energy storage and discharge options, will help integrate renewables into the energy mix. Smart Grid improvements will also facilitate net metering, the process allowing small renewable energy facilities to sell excess power back to the grid.<sup>34</sup>

Some consumers have privacy concerns about smart meters and two-way communications over the grid. Collecting and communicating energy use information about a household or business shows if people are present and activities they are conducting to some extent. Consumers fear that utilities and government regulators may restrict the ability use power as they choose.

Increased funding for Smart Grid improvements will provide a major opportunity for distributors to supply smart meters, building controls, and renewable energy components to residential, commercial, and industrial markets.

## Did you know?

The Electric Power Research Institute estimates Smart Grid improvements could result in reduction in greenhouse gas emissions equivalent to 60 to 211 million metric tons of carbon dioxide (CO<sub>2</sub>) in 2030.<sup>35</sup>

The National Institute of Standards and Technology (NIST) has been charged under the Energy Independence and Security Act with identifying and evaluating existing standards, measurement methods, and technologies that will support Smart Grid adoption.

## product shelf

- >> The ZigBee Alliance offers a range of smart, wireless control and metering devices for residential, commercial, and industrial applications.
- >> QuadLogic offers a line of smart meters that communicate over existing power lines and sells primarily to the commercial and industrial markets.<sup>36</sup>



## Carbon Markets

Global carbon trading grew significantly, from 799 megatons (Mt) in 2005 to nearly 4.9 billion tons in 2008, as shown below. In 2008, the carbon market's total value was estimated at \$125 billion, more than double what it was worth in 2007.<sup>37</sup>

**Other compliance carbon markets are currently organizing in the U.S.:**

- >> The [Midwestern Greenhouse Gas Accord](#)
- >> The [Western Climate Initiative](#) (WCI).<sup>38</sup>

The [Regional Greenhouse Gas Initiative](#) (RGGI) is the first mandatory, market-based carbon market in the U.S. This cooperative effort consists of 10 states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New

Hampshire, New Jersey, New York, Rhode Island, and Vermont. These Northeast and Mid-Atlantic States are committed to limiting greenhouse gas (GHG) emissions.

Six greenhouse gases are recognized under the Kyoto Protocol, including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). However, carbon dioxide emissions get the most attention due to the volume released into the atmosphere every year. The states in the RGGI agreed to cap carbon dioxide emissions generated by utilities, and they will require a 10% reduction by 2018.<sup>39</sup> Last year, 70 Mt of carbon was traded in this market with a value of \$240 million.<sup>40</sup>

Like RGGI, these markets will regulate the amount of carbon emissions by establishing caps. The regulating body either auctions off or gives out a certain amount of carbon allowances or permits. Carbon emitters can then purchase or sell the permits in order to establish more feasible limits.

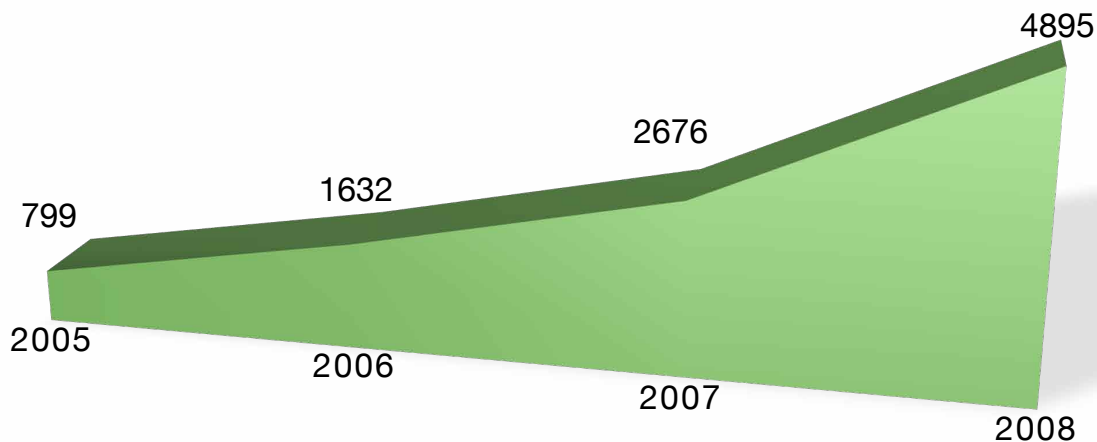
For instance, if a newer, more efficient power plant has more permits than it needs, it can sell the excess to older facilities, giving them a greater carbon allowance. The cap sets the overall amount of carbon that can be emitted, but tradable permits allow businesses flexibility in investing in the most cost-effective emission reduction programs.

The [Chicago Climate Exchange](#) (CCX) is another cap-and-trade system operating in the U.S. Under this system, members make voluntary and legally binding commitments to meet annual GHG emission reduction targets. Members who emit above the targets comply by purchasing CCX Carbon Financial Instrument<sup>®</sup> contracts, each of which represents 100 metric tons of CO<sub>2</sub>.<sup>41</sup>

### For More Information

About an NAED member participating in carbon offsets, see NAED's *Hubbell and AAL Lighting the Way Case Study*, part of the Sustainability Best Practices Series.

### Volume of Carbon Traded Globally (Megatons)



These regional carbon markets provide a strong example for a nationwide approach to GHG reduction. Momentum for establishing a U.S. cap-and-trade framework is growing.

Christine Ervin, the first President and CEO of the [U.S. Green Building Council](#) and a former U.S. Assistant Secretary of Energy under the Clinton Administration, described the direction cap-and-trade legislation is taking under the Obama Administration:

“I think it is clear this Administration views moving to a low-carbon economy as a key pillar in revitalizing the economy. Both the stimulus package and the Administration’s proposed Fiscal Year 2010 budget are laying the groundwork for this. The stimulus package contains \$59 billion for clean energy, including energy efficiency. The 2010 budget provides considerable increases for ongoing programs. Perhaps the most significant aspect of this budget is the commitment to cap-and-trade legislation and using revenue generated by this mechanism to fund energy programs.”

Ervin continued, “Overall, the budget assumes about \$645 billion will be generated between 2013 and 2019. Of that, about \$150 billion is targeted for clean energy programs with remaining funds going toward a “Global Warming Tax Cut for Working Families” fund, which aims to provide refundable income tax credits for working low-income families.”<sup>42</sup>

U.S. cap-and-trade regulations will increase investments in energy management and efficiency technologies as a means of reducing carbon emissions.

“*The measures and investments we make to turn low-carbon energy and energy efficiency into a vibrant and growing economic engine will set the stage for the passage of a cap-and-trade bill.*”<sup>43</sup>

— Roger Ballentine, Former White House Climate Change Task Force Chairman

## SURVEY SAYS: REDUCING GREENHOUSE GAS EMISSIONS

[Building Design + Construction](#) magazine conducted an online survey among 20,815 of its readers in the architecture, engineering, and construction industries during June and July 2008. The survey focused on opinions, perceptions, and actions relative to climate change.

The survey asked, “Which of the following actions or technology solutions has your firm or organization already implemented in buildings it designed, built, or owns? Which do you plan to implement in the next two years?”

The responses most relevant to the electrical industry are as follows:<sup>44</sup>

Actions or Technology Solutions that reduce GHG emissions from buildings	Already implemented	Plan to implement in next 2 years	Not sure / no opinion
Lighting efficiency improvements	78%	12%	11%
Occupancy sensors and controls	67%	16%	19%
Building automation systems	58%	18%	25%
Variable-speed drives	52%	13%	35%
Daylighting/light shelves	51%	18%	32%
Solar (thermal)	30%	27%	44%
Photovoltaic electricity generation	24%	28%	49%
Wind energy	9%	24%	67%

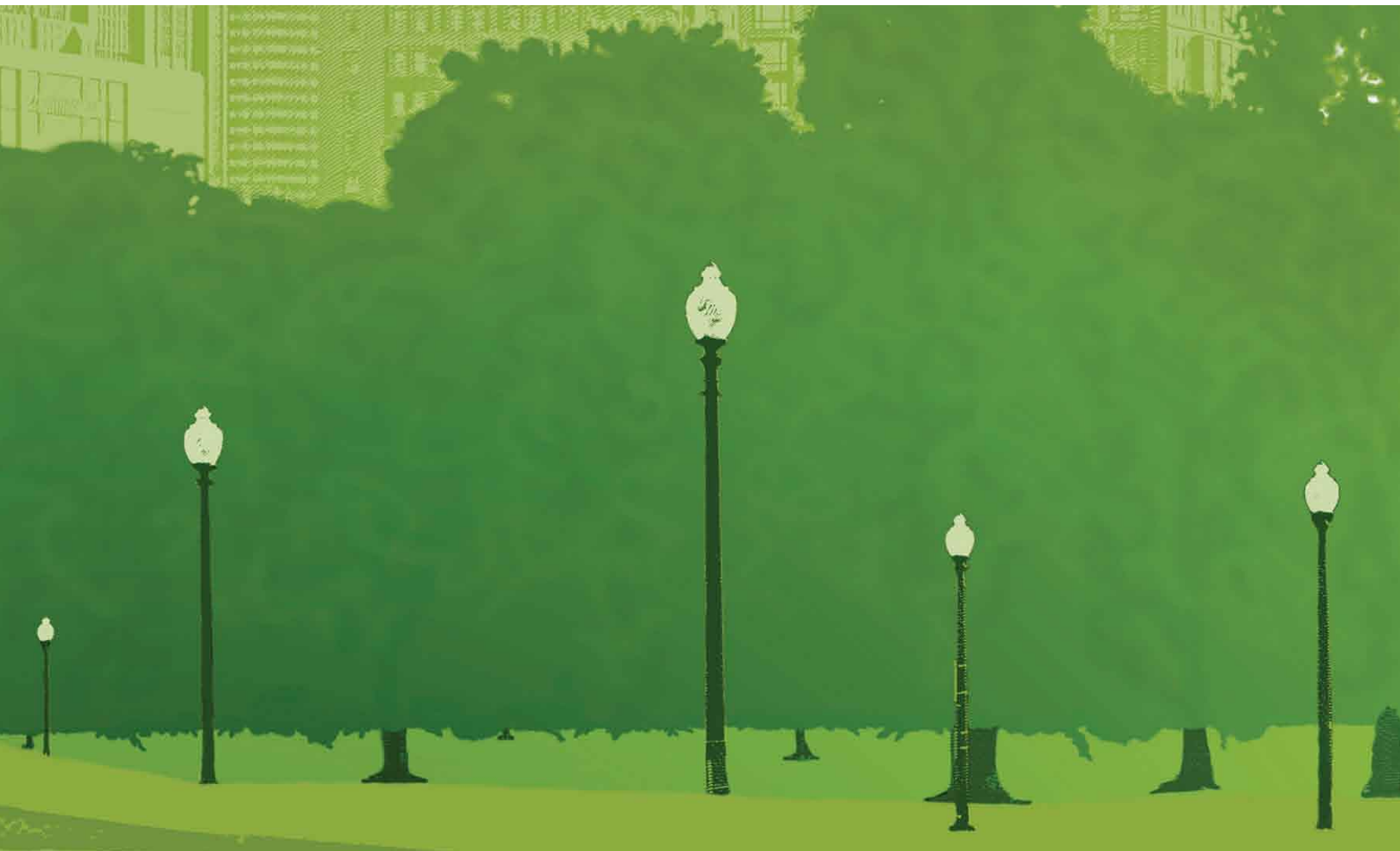
## Conclusion

The energy management and efficiency markets offer major opportunities for electrical manufacturers and distributors. The billions in funding the stimulus package will bring to the table will require more participation, far more than the ESCO industry alone can provide.

In addition to the traditional products and services used to improve energy efficiency, such as lighting retrofits and energy audits, current trends in the renewable energy, smart grid, and carbon markets will require new technologies and capabilities. Electrical manufacturers and distributors are uniquely positioned to meet this growing demand.

### For More Information

On what products and services will be required for this market, refer to NAED's Findings in Brief: *Services & Solutions to Help Customers Go Green.*



## Endnotes

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