



NATIONAL ASSOCIATION OF
ELECTRICAL DISTRIBUTORS

Smart Tools for Smart Distribution®

Smart Grid Focus

The Renewable Energy Market

OVERVIEW

What are the opportunities for electrical distributors in the renewable energy market as it relates to the smart grid? That's what this FOCUS piece is all about.

Table of Contents

2 Sizing up the market

3 The smart grid factor

4 Follow the money

5 Business boosters

6 The geography factor

7 Products at a glance

8 End notes

IT'S A WIN-WIN OPPORTUNITY

Concern over climate change, carbon emissions from fossil fuel plants and the nation's dependence on foreign oil have focused national attention on the potential in clean, green renewable energy sources like solar and wind. And that desire – or increasingly, that mandate – to integrate renewable energy into our power mix is a major driver of a smarter, interconnected grid. Simply put, the existing grid is not designed to accommodate distributed generation and the intermittency and integration issues that come with a shift to renewables.

And make no mistake – that shift is happening. [The U.S. Energy Information Administration](#)¹ (EIA) reports that non-hydro renewable energy sources – solar, wind, geothermal and biomass – increased by 16.5% over 2009 and provided 4.08% of net U.S. electrical generation. As you'll read later in this report, forecasts for the renewables market show heady growth in the decades ahead.

So how can electrical distributors take advantage of this red-hot market? By learning about industry trends and the needs of your customers, you can focus your product offerings and sales messaging to tap into this opportunity. Renewable energy and enabling smart grid technologies can be a win for you – and the environment.

But keep in mind the industry is still in its infancy. Rapid changes in the sector mean that some technologies that weren't financially feasible just a few years ago are now, or that last year's hot technologies have already been surpassed by something else. And government incentives which have driven some of the growth are constantly changing too.

For distributors who want to position themselves in the renewables market, tracking updates and changes is part of the game. With the tremendous growth potential of the renewables and related smart grid markets, it is worth the effort. This report will discuss the renewables market and provide recommendations to add this sector to your sales strategies.

SIZING UP THE RENEWABLES MARKET

Renewable energy may be all the buzz today, but it is not a new concept by any means. For years, wood (which we'd call biomass today) supplied the majority of the energy used in this country. Hydropower has generated electricity to parts of the United States for over a century now. And at least seven western states have geothermal power plants that utilize heat from below the earth's surface. But in recent years, at least three factors have put renewed emphasis on renewables:

- Policy makers are debating taxing or otherwise regulating greenhouse gas emissions
- We've watched oil and natural gas prices skyrocket
- And we're building an interconnected electric grid that can accommodate renewable energy like wind and solar

That last point, of course, is where electrical distributors enter the picture. Is there enough opportunity in renewables and smart grid to carve out a viable niche? If so, which technologies show the most promise today? And where are electrical manufacturers headed in terms of renewables?

To better determine a direction, here's a snapshot of growth forecasts for the various renewables markets:

ALL RENEWABLES

Market research firms Zpryme and ICP predict that the renewable energy manufacturing, equipment and technology market value for wind, solar, biomass, hydro and geothermal sources will more than double from 2010 to 2015, reaching \$263.2 billion by 2015.²

SOLAR

SBI Energy forecasts solar power could be a \$173 billion business by 2015 – an increase of 28 percent from 2010.³ Of that, concentrating solar power (CSP uses mirrors or lenses to focus sunlight onto a smaller area; the concentrated light is converted to heat which drives a heat engine, usually a steam turbine, connected to an electrical power generator) is the fastest growing segment. Market studies predict that business will be worth \$3 billion by 2014, up from \$700 million in 2010.

GEOTHERMAL

Using a conservative forecast scenario, Pike Research estimates that escalating investment could increase geothermal power capacity 34% to 14.3 GW by 2020.⁴

WIND

The American Wind Energy Association's 2010 annual report indicates America's wind industry grew by 15% in 2010 and provided 26% of all new electric generating capacity in the U.S.⁵ The trend now is toward offshore wind farms rather than land-based turbines. According to SBI, that global market will grow 11% to more than \$78 billion by 2015.

BIOMASS

The market value of electricity generated from biomass in the U.S. – including feedstocks such as corn and grain, algae, municipal waste, forest residue, etc. – will increase from \$45 billion in 2010 to \$53 billion in 2020, according to Pike Research.⁶

HYDROPOWER

A study by Navigant Consulting of potential hydropower growth in the U.S. found that 60,000 megawatts of hydropower could be added by 2025. Currently hydropower accounts for 66% of the renewable energy in the U.S. In March 2011, the Hydropower Improvement Act of 2011 was introduced in Congress. It would create competitive grants to encourage more hydropower production.⁷

SIZING UP THE RENEWABLES MARKET

Market forecasts are only part of the story – a distributor must also consider if the technologies and products available to them will be viable selling options. Discussions with leading manufacturers about their involvement in the renewables market indicate that solar is the focus right now.

One global manufacturer's approached the market by looking at the smart grid space and their product portfolio to determine optimal offerings. They opted to promote a solar microinverter that "takes the black magic complexity" out of the technology. The end result for this company is a turn-key solution that is easy for contractors to utilize in projects.

Another major electrical equipment manufacturer agrees that solar provides tremendous growth opportunities, particularly since much of the renewable activity is fueled by stimulus money. In addition, they consider the Electric Vehicles (EVs) infrastructure to be a long-term strategy for distributors.

Most of the major manufacturers are moving in the direction of solar and EVs, but as one manufacturer mentioned, don't be afraid to explore additional renewable market opportunities. The smart grid space is dynamic right now and distributors should remain aware of all possibilities to incorporate in their sales strategies.



THE SMART GRID FACTOR

The smart grid, a much more advanced power management system that can better handle de-centralized energy generation, plays a key role in the adoption of renewable energy. Without its intelligence, utilities could be overwhelmed by energy generated by customers, or even by the irregular output from solar and wind farms.

One major question is how fast the smart grid will develop. Though progress has been made, unforeseen challenges, complaints, and integration issues can hamper its progress. For example, utilities and regulators across the country are receiving complaints from consumers about potential health risks from the radio waves that smart meters emit. The situation has led to temporary moratoriums on meter deployments in some areas and prompted PG&E, a large California utility hammered by protests, to propose a plan that allows customers to "opt out" of smart meters.⁸ Other complaints have focused on smart meters disrupting other household electronics or overpricing customers for their electricity consumption. And there are also concerns about privacy and security in relation to smart meters. With little precedent, it's hard to say how utility regulators will rule in the debate.

FOLLOW THE INCENTIVE MONEY

Some customers undertake renewable energy projects simply because they want to boost their green credentials. Cost savings, however, can be even more motivating for your customers and this is an area where government incentives can radically change the market.

Congress has repeatedly extended the Federal Production Tax Credit (PTC) and Investment Tax Credit (ITC). Additionally, the [American Recovery and Reinvestment Act](#)⁹, launched in 2009 to stimulate the U.S. economy, allocated \$45.1 billion for renewable energy, energy efficiency, and other related programs. In the first year, \$2.3 billion was spent on grants for solar and wind farms and other renewable energy projects which spurred major growth. That same year, new wind farm installations were forecast to decline by 50%, but the allocation of government grants caused installation to grow by about 25% instead. Additionally, the U.S. solar market grew two-thirds in 2010 to become a \$6 billion business.¹⁰

The incentives have not only transformed the market for large renewable energy projects, but small ones, too. For example, in California the combination of state incentives and falling prices put rooftop solar installations within reach of the middle class. A five-kilowatt rooftop solar system cost about \$13,000 at the end of 2010. State incentives covered nearly half the cost. Two years earlier, that same system would have cost \$40,000 without incentives.¹¹

Key Points to the 2009 American Recovery and Reinvestment Act:

\$45.1

BILLION FOR RENEWABLE ENERGY & ENERGY EFFICIENCY WAS ALLOCATED TO STIMULATE THE U.S. ECONOMY

\$2.3

BILLION SPENT ON GRANTS FOR SOLAR & WIND FARMS IN THE FIRST YEAR TO STIMULATE GROWTH

25%

GROWTH IN WIND FARM INSTALLATIONS IN THE FIRST YEAR

66%

GROWTH IN THE SOLAR MARKET IN 2010

Though it is tempting to tout how incentives will ease initial costs, be sure to examine their full impact on the bottom line. For example, even with the incentives, individual solar projects may not be immediately cost effective, but should boast other energy efficient benefits. The Stella Group estimates that even with federal tax incentives – including a 30% Investment Tax Credit – and local utility rebates, buildings may take up to 20 years to pay for themselves.¹² In those cases, it is imperative to underscore other advantages, such as providing backup power during outages and positive public relations.

REALITY CHECK: As one distributor sees it

A source of frustration for owners of proposed projects is the possibility of expiring tax incentives throughout the course of a project. As a result, there's a lot of assumptions and guesswork in the bidding. To add to the frustration, they may not hear any news for a few months. The cascade effect of bidding and re-bidding coupled with no response can lead to a proposal being redone 4-5 times. However, their frustration can turn into your opportunity.

What to do?

Stay on top of the tax incentive situation yourself and be proactive about sharing the information with partners and customers. Good sources for state and federal incentive programs include [NAED's state toolkits](#) or [Database of State Incentives for Renewables](#)¹⁵

BUSINESS BOOSTERS

Get a head start in the renewables space with these tips from industry insiders:

Run the numbers, do the legwork

Renewable energy projects provide individual homeowners and businesses with a number of financial advantages, including energy savings (improving cash flow for businesses) and an increase in the value of the building.

Detailed energy audits can help quantify the amount of power currently wasted and put any projected savings into real terms. It's also important to know which government and utility incentives apply to a particular project. The customer may not know or may not be aware of all of them.

The NAED Selling Green Toolkit¹⁶ recommends being careful in how you phrase the return on investment. For example, instead of saying that it will take three years to break even on the project, which draws attention to the cost, phrase the return in positive terms, such as the amount of cash it will return over 10 years. You may also want to talk about how much the project will increase the building's value immediately.

As one distributor who has worked with utilities notes, it can be challenging to make connections if you don't have an existing relationship with a utility. By staying informed about what's going on in your area you may not need to get an audience with the local utility. Make it your business to know what incentives/programs are available, what forms need to be filled out and put the pieces in place yourself. Handling the paperwork for them is a value-add your customers may find hard to resist.

Plant seeds with contractors

What are valid upgrades? If solar, for instance, isn't an option now, are there things you can/should put in place to accommodate future upgrades? This applies to both residential and commercial projects.

Leverage existing products

Keep in mind that a lot of the products you already sell have potential in the renewables space. Any solar application, for instance, is going to need the basics – meter sockets, conduit, wire, safety switches, etc. If your business is supplying products for general electrical infrastructure, you can leverage your existing lines and existing channels to participate in renewable energy projects.

Strengthen your position

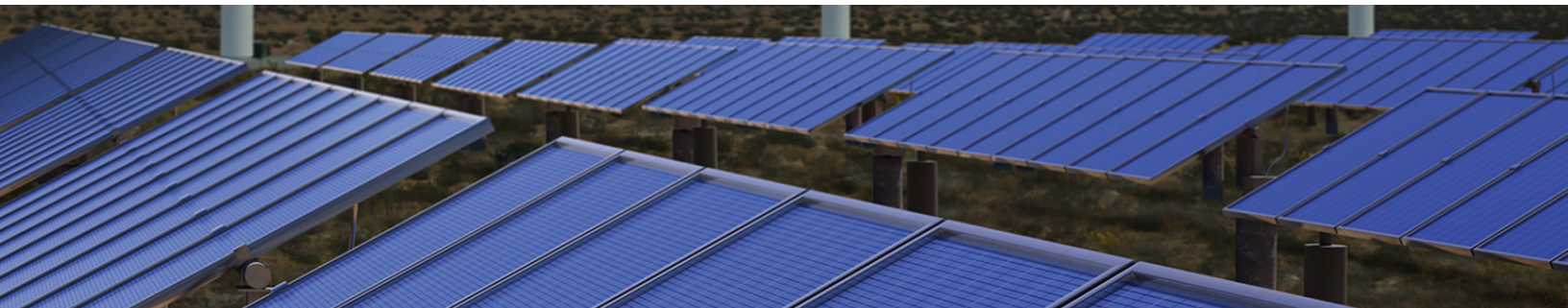
Learn all the pieces of the puzzle from the manufacturers you work with and stay up to date on what they have to offer or are designing for the future. In turn bring the contractors you work with on board by being their primary trainer, and their link to what the manufacturers are doing.

Use the hometown advantage

If you are a local distributor you no doubt are very familiar with local regulations, safety requirements and the like and should try to use that to your advantage. If you cover a larger area, you can garner similar advantage by playing up local references who can speak to your knowledge and experience in the area.

Associate with renewable advocates

Many states have active nonprofit associations that are focused on promoting renewable energy. Often they will have directories of companies involved in the space on their website and/or other information that could provide you with a lead.

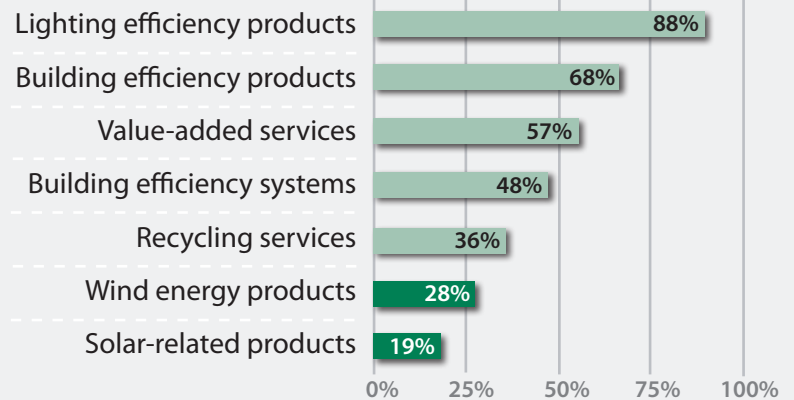


PRODUCTS AT A GLANCE

In its 2010 [Renewable Energy and Efficiency Products Study](#)¹⁷, *tED* magazine found that wind and solar energy were at the bottom of the list of categories offered most frequently by distributors.

But with major manufacturers increasingly focused on renewable energy, that may change sooner than you think.

Distributors Currently Offer These Product Categories



Refer to *tED* Green Room's [Renewable Energy/Efficiency Products Study](#) to learn about all types of renewable energy products and their growth potential.



Which products should you have in your renewables portfolio?

SOLAR ENERGY

Solar power may have the fewest number of distributors, but the category is growing fast. More distributors signed on to carry all categories of solar products in 2010. Here are some ideas based on what distributors currently in the space are carrying (in order of most common to least):

- Enclosures
- Overcurrent protection
- Batteries
- Mounting systems
- Solar panels
- Photovoltaic inverters (grid-tie)
- Micro-inverters
- Photovoltaic inverters (stand-alone)
- Photovoltaic controllers

WIND ENERGY

If you're in a location where you see business opportunities in wind energy products, particularly in terms of maintenance and upkeep, here are products some distributors currently in the space are offering (in order of most common to least common):

- Circuit protection / fuses
- Cables / connectors
- Capacitors / switches
- Low-voltage motors and controls
- Medium-voltage motors and controls
- FAA obstruction lighting
- Wind turbine replacement parts

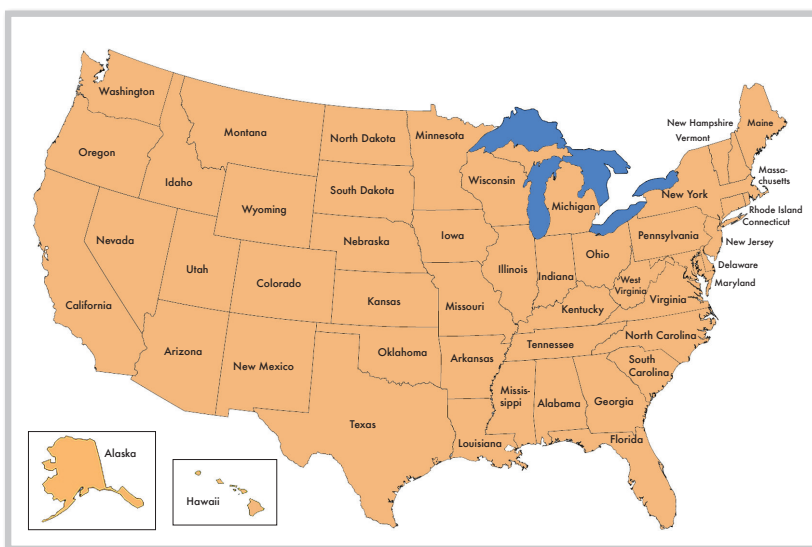
THE GEOGRAPHY FACTOR

In addition to knowing about the incentives available in a particular area, distributors also need to understand which forms of renewable energy have the most potential in each location they serve.

Wind Powering America, run by the U.S. Department of Energy, has prepared [high resolution maps](#) of the wind power potential throughout the country. In general, the greatest wind potential is in the central part of the country, including the states of North Dakota, South Dakota, Nebraska and Kansas. Many states, though, have smaller sections where the winds are regularly strong.

The southwestern United States, in particular, the states of Arizona, California, Colorado, New Mexico, Nevada, Texas and Utah, provides the most potential for solar power. The National Renewable Energy Laboratory produced [detailed maps](#) to pinpoint the potential areas.

Map of the United States of America



END NOTES

- ¹ U.S. Energy Information Administration, "Electric Power Monthly" (March 2011). Highlights available at: http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html
- ² Zpryme, "U.S. Smart Grid Technology for Renewable Energy Integration to Reach \$14B by 2015" (March 2011). Highlights available at: <http://smart-grid.tmcnet.com/topics/smart-grid-fa/articles/153957-us-smart-grid-technology-renewable-energy-integration-reach.htm>
- ³ SBI Energy, "Six Clean Energy Markets That Will Change Life as We Know It in the Next Five Years" (August 2010). Highlights available at: <http://www.marketwire.com/press-release/Six-Clean-Energy-Markets-That-Will-Change-Life-as-We-Know-It-in-the-Next-Five-Years-1310318.htm>
- ⁴ Pike Research, "Geothermal Power Capacity Could More than Double by 2020" (March 2011). Highlights available at: <http://www.pikeresearch.com/newsroom/geothermal-power-capacity-could-more-than-double-by-2020>
- ⁵ American Wind Energy Association, "U.S. wind industry continues growth, despite slow economy and unpredictable policies" (April 2011). Highlights available at: http://www.awea.org/newsroom/pressreleases/release_07APR11_.cfm
- ⁶ Pike Research, "R and D growth to boost biomass market in the U.S. says study" (July 2010). Highlights available at: <http://www.ecoseed.org/biomass/article/11-biomass/7680-r-and-d-growth-to-boost-biomass-market-in-the-u-s-says-study>
- ⁷ Renewable Energy World, "Hydropower Legislation Bolsters Need for Clean, Safe Energy" (March 2011). Highlights available at: <http://www.renewableenergyworld.com/realblog/post/2011/03/hydropower-legislation-bolsters-need-for-clean-safe-energy>
- ⁸ Earth2tech, "PG&E Picks 'Radio-Off' Smart Meter Option," (March 2011). Highlights available at: <http://gigaom.com/cleantech/pge-picks-radio-off-smart-meter-option/>
- ⁹ Department of Energy, American Recovery and Reinvestment Act. Highlights available at: http://www.oe.energy.gov/american_recovery_reinvestment_act.htm
- ¹⁰ Wall Street Journal, "US Solar Power Market Reaches \$6B In 2010, Installations Double-Study" (March 2011). Highlights available at: <http://online.wsj.com/article/BT-CO-20110310-704665.html>
- ¹¹ MIT Technology Review, "U.S. Solar Market to Double in the Next Year" (February 2010). Highlights available at: <http://www.technologyreview.com/energy/24498/?mod=related&a=f>
- ¹² National Association of Electrical Distributors, "The Green Market: Trends, Breakthroughs & Business Opportunities" (2009). Highlights available at: http://www.tedgreenroom.com/uploadedFiles/TEDGreenRoom/Resources/Glossary/MarketAnalysis_BusinessOpps.pdf
- ¹⁵ Database of State Incentives for Renewables and Efficiency. Highlights available at: <http://www.dsireusa.org/>
- ¹⁶ National Association of Electrical Distributors, "Selling Green Toolkit." Highlights available at: http://www.naed.org/Research/Going_Green_Topics/Selling_Energy_Management_Solutions/Selling_Energy_Management_Solutions/
- ¹⁷ National Association of Electrical Distributors, "Renewable Energy and Efficiency Products Study," (June 2010). Highlights available at: <http://www.tedgreenroom.com/categoryentry.aspx?id=4388&listtaxid=93&menutaxid=90>

Channel Advantage Partnership

Copyright (c) 2011 NAED Education & Research Foundation, Inc. All rights reserved.

Smart Grid FOCUS: Renewables has been made possible through the generosity of the electrical distributor and manufacturer members of the NAED Foundation's Channel Advantage Partnership. No part of this report may be reproduced or copied in any form or by any means-graphics, electronic or mechanical, including photocopying, taping, or information and retrieval systems - without written permission from the NAED Education & Research Foundation, Inc.

The findings, opinions, conclusions and recommendations provided herein are based on independent research, commissioned and funded by the NAED Education & Research Foundation, Inc. Information in this report should not be regarded as an endorsement or opinion of the Foundation or its parent organization, National Association of Electrical Distributors, Inc.

Research conducted by Global Smart Energy, Seattle, WA (<http://www.globalsmartenergy.com/>).