

Careful Strategic Moves for Green Energy Service Markets

With global warming and climate change becoming more prominent in the national political and economic debate, a number of “green mega-trends” have emerged that impact energy and utility companies. These range from aggressive environmental commitments by leading corporations, to increased state and local regulatory intervention mandating specific renewable and energy efficiency targets, to interest in voluntary carbon offset trading, to construction of green-certified buildings. Some of the most important mega-trends are shown in Exhibit 1.

For energy and utility companies, these mega-trends are creating demand for a variety of new

services, such as consulting on green strategies, designing and constructing new green buildings, implementing renewable generation solutions, advising companies on how to become more energy-efficient, aggregating carbon credits across multiple projects, and executing operation and maintenance contracts on green solutions. In some cases, these services will require a whole new business model on the part of the supplier. At a minimum, these trends raise the level of uncertainty for energy and utility companies. Standing on the sidelines is no longer a viable option; it’s time for executives to identify and prepare for the opportunities that best align with their organization.

Exhibit 1 Green mega-trends

- 1 Increasing climate change commitments from major companies and institutions
- 2 Increasing state regulation driving increased renewable usage
- 3 Surge in utility energy efficiency and demand-side management programs
- 4 Sharp growth in green building certifications
- 5 Growth in the offsets market

1. Increasing climate change commitments from major companies and major institutions

The current global climate debate has forced corporations to take a leading role. Major companies including Goldman Sachs, Procter & Gamble, and Whole Foods have rapidly adopted aggressive carbon neutrality, sustainability, and renewable energy goals, as summarized in Exhibit 2.

Exhibit 2 Stated green goals from leading corporations

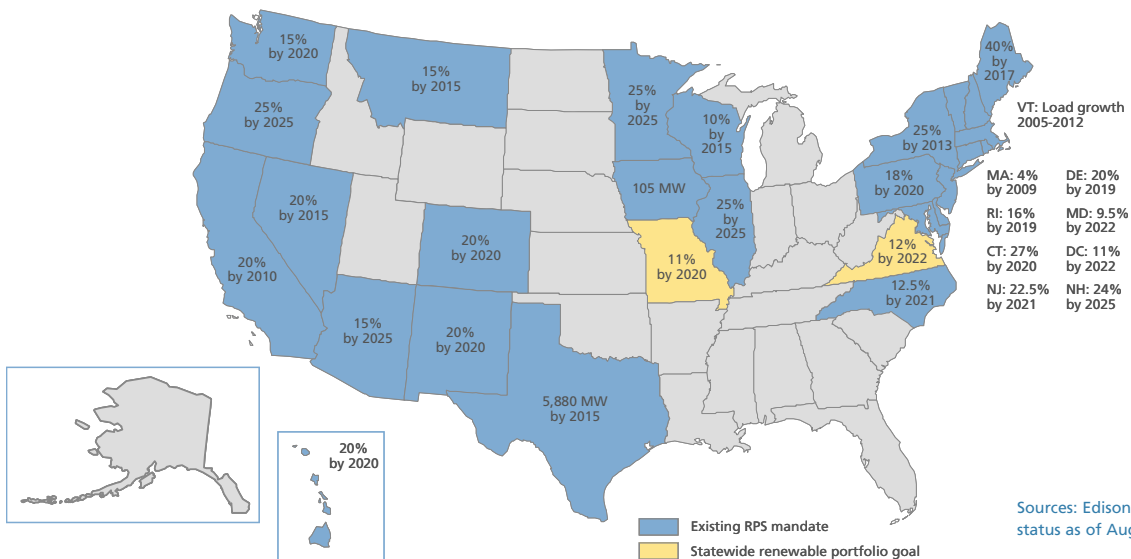
	Carbon neutrality	Sustainability	Renewable energy
Sample objectives	<ul style="list-style-type: none"> Achieve carbon neutrality in 3-5 years Achieve zero-carbon status Reduce solid waste by 25% in 3 years Carbon neutral supply chains Reduce GHG by 7% by 2012 	<ul style="list-style-type: none"> Move to LEED Gold certification in all facilities Increase vehicle efficiency by 100% in 10 years Eliminate 30% of store energy use Eliminate non-renewable energy usage Implement personal sustainability projects 	<ul style="list-style-type: none"> Invest \$1 billion in renewable energy or energy-efficiency programs

Wal-Mart has some of the most aggressive goals, seeking “to be supplied 100% by renewable energy; to create zero waste; and to sell products that sustain our natural resources and the environment.”

2. Increasing state regulation driving increased renewable usage

Given that federal lawmakers have been slow to enact broad legislation that will set the overall carbon reduction goals for the U.S., states have taken the lead by enacting specific legislation to drive changes in customer behavior. Several states have started to implement Renewable Portfolio Standard (RPS) legislation seeking to drive changes in behavior by industries and consumers, as shown in Exhibit 3.

Exhibit 3 States with renewable portfolio standards

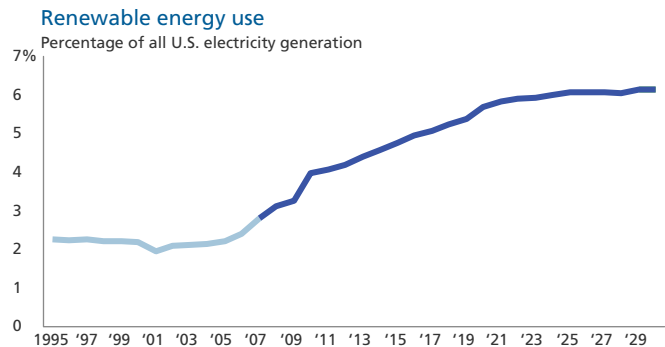


Sources: Edison Electric Institute, status as of August 28, 2007.

In addition, with greenhouse gas management (GHG) legislation looking more likely, carbon-footprint awareness rising, and technology improving, renewable energy sources will continue to gain more importance in the U.S. Exhibit 4 shows the expected growth of renewable energy (municipal waste, wood and other biomass, solar thermal, solar photovoltaic, wind and offshore wind) as a share of total U.S. electricity generation.

From 2007 to 2030, the share of total generation attributable to renewables will double from 3% to 6%, for an estimated addition of 44.7 gigawatts (the equivalent of about 20 large coal or nuclear power plants). Note that these figures are based on current trends and do not take into account a mandated federal RPS standard. If the federal government were to set a federally mandated standard, the power added from renewables could increase significantly—more than double in some scenarios.

Exhibit 4 Renewable energy generation growth



Source: U.S. Energy Information Administration.

3. Surge in utility energy-efficiency and demand-side management programs

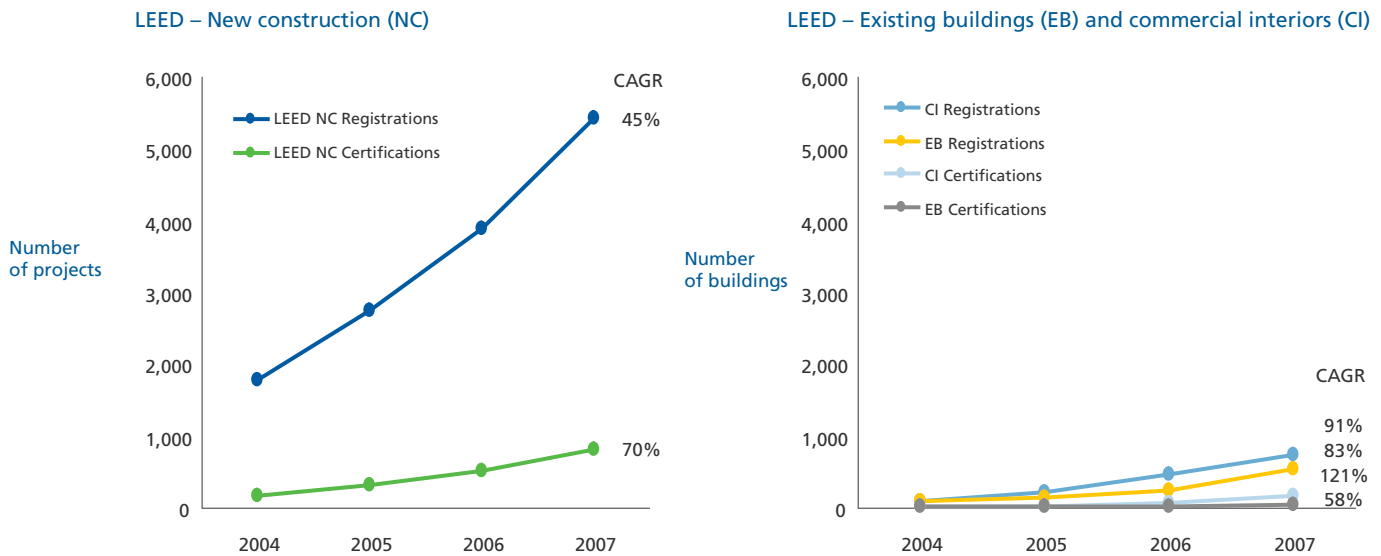
The current energy debate has stimulated a resurgence in utility demand-side management (DSM) and energy-efficiency (EE) programs, which are a relatively cost-effective means of curbing energy consumption. Favorable EE/DSM legislation has also spread, with many states allowing EE/DSM savings to count towards their Renewable Portfolio Standards or passing other provisions to encourage conservation. Many states have adopted formal long-term goals or voluntary targets for EE/DSM programs. Some states have formal proceedings (e.g., Arizona, Nevada), others have financial incentives (e.g., California, Wisconsin), while others are strongly encouraging the use of these programs (e.g., Indiana and Florida).

With some states already in the rule-making process, utilities have been rolling out a number of DSM/EE programs. These programs often feature programs tailored to specific niches, such as new construction, retrofit projects, lighting upgrades, or education buildings. For example, California created an aggressive program, budgeted at \$30 million for 2007, that targets higher education. The program includes retrofits, monitoring-based commissioning, emerging technology demonstrations, and training and education. As EE/DSM programs become more widespread, the opportunities for program creators, managers, and implementers will become more lucrative.

4. Sharp growth in green building certifications

Another important trend is the move to greener (meaning more energy- and resource-efficient) buildings. The U.S. construction industry, which represents 14% of GDP, has moved towards Leadership in Energy and Environmental Design (LEED) certified design and environmentally friendly construction. Analysts expect green construction to exceed \$60 billion by 2010, representing a 50–70% compound annual growth rate (see Exhibit 5).

Exhibit 5 Growth in LEED certifications and registrations



Source: U.S. Green Building Council; State of Green Business 2008 from GreenBiz.com; Oliver Wyman analysis.

5. Growth in the offsets market

Over the past two years, commercial interest in carbon trading markets has grown in Europe, because of legislation, and in the U.S., on a voluntary basis. The U.S. carbon market, while growing fast, has reached just \$91 million in 2006, a fraction of Europe’s \$25 billion (see Exhibit 6). However, U.S. carbon legislation looks more likely, and if implemented could dramatically increase the size of market.

Exhibit 6 U.S. and Europe carbon offsets markets

	2006 volume (Million tons of CO2)	2006 value (\$ millions)
Voluntary OTC offset market	13.4	54.9
CCX	10.3	36.1
EU ETS trading scheme	1,101	24,357
Primary clean development mechanism	450	4,813

Source: State of the Voluntary Carbon Markets 2007 – Ecosystem Marketplace and New Carbon Finance.

Green energy services

In aggregate, the green mega-trends signal an important shift towards more sustainable, efficient, carbon-neutral, and renewable energy-related services. Industrial and commercial customers, as well as residential consumers, will look for companies that can help them achieve green energy goals, and value will migrate to those firms that best address their customers’ priorities.

What are the opportunities for energy companies, utilities, and entrepreneurs in green energy services? They range from high-level strategy consulting, energy auditing, and project design, to green building and renewable construction, to carbon offset aggregation and trading, to greenhouse gas management. We have identified at least 12 major opportunities that companies can consider, as shown in Exhibit 7.

Exhibit 7 **Green energy services opportunities**

Green consulting strategies	Green building design and construction	Renewable design and construction	Energy-efficiency program design and execution
Renewable energy procurement	Carbon offset project development	Carbon offset aggregation	Carbon offset retailing
Green financing and securitization	GHG monitoring and management	Green infrastructure monitoring	Green operations and maintenance

Clearly, the green energy services space has multiple dimensions. Solar power players have developed innovative, long-term financing mechanisms, encouraging wider adoption. Carbon offsets are aggregated and traded across borders and exchanges. Small architecture and engineering (A&E) firms have begun to specialize in LEED design. Energy services companies are expanding their services to provide renewable solutions. Financial institutions are developing vehicles to finance energy efficiency projects.

Some of these early movers will be tomorrow’s winners, especially the firms that analyze the opportunities in a structured way and that anticipate potential threats to their existing business, so that they can mitigate the impact.

Six promising strategic positions

Understanding the nature of the opportunities is just one piece of the puzzle. Companies must also stake out the right strategic position. We have identified six strategic positions that stand a good chance of successfully addressing the green opportunities:

1. Serving a niche or underserved market. Serving specific niches within a market can secure a loyal customer base, improve margins, and increase the barriers to entry by competitors. Niches such as elementary schools, big-box retailer roof-space, and specific energy-intensive industries such as steel manufacturing have already been targeted by suppliers. While niche markets are limited in size, margins are usually more attractive, allowing companies to extract more value from a smaller, more manageable customer base. In California, for instance, energy-efficiency programs have been developed to target certain under-served markets like the food service industry. The California Statewide Food Service Equipment Program offers incentives for installation of energy-efficient equipment in this energy-intensive sector. Once a company has successfully penetrated a niche and built relationships with the key players, the barriers to entry by competitors rises dramatically.

2. Leveraging technical expertise. Recognized technical expertise instills confidence and loyalty among customers and commands premium pricing. As green energy services and solutions grow in technical complexity, those firms that can master technical expertise will have a competitive advantage. A&E firms such as CodeGreen that specialize in accredited LEED design have enjoyed faster growth and higher margins than traditional A&E firms. As a result, traditional A&E firms and construction companies are racing to develop internal LEED expertise. CodeGreen has been able to leverage its initial success, thanks to technical prowess, into deeper customer relationships and a strong pipeline.

3. Forging strong relationships with leading-edge constituencies. A strong relationship with leading-edge companies, institutions, or cities builds cred-

ibility, leads to valuable free marketing, and fosters business development. One prominent example is the work that consultancy BluSkye did with Wal-Mart to develop Wal-Mart's long-term sustainability plan. The result made headlines across the world, burnished BluSkye's brand, built credibility, and aided business development.

4. Integrating a broad range of green products or services. Offering and integrating a broad range of products and services within a specific market can appeal to customers through the simplicity of dealing with a single vendor, leading to a greater share of total customer spend and deeper relationships with those customers. Recently, building retrofitters, with capabilities to install efficient lighting, HVAC, and so on, have broadened service offerings in an attempt to move towards the one-stop-shop position. Another example is Weston Solutions, which aspires to be a "trusted integrator of sustainable solutions" and has built additional capabilities from its expertise in green construction. In addition, energy services companies have successfully positioned themselves as energy partners with the capability to provide customers with customized energy solutions for any situation.

5. Providing a product or service with a unique value proposition. Like technical expertise, a unique value proposition can command premium pricing and raise barriers to entry by competitors. This is especially true if there is protection under intellectual property laws. The race to develop and patent the most advanced photovoltaic technology is one example. And in software solutions, Aravo has developed software to track GHG emissions across the entire value chain. However, unique value propositions are not limited to technology. Companies able to develop unique capabilities in customer service or other aspects of business will also enjoy a strong strategic position.

6. Providing or arranging innovative financing. Innovative financing improves customers' access to products and services, deepens customer relationships, and may become an additional source of

value. SunEdison's Solar Power Purchase Agreement has won customers such as Wal-Mart, Whole Foods, and Xcel energy. Previously, these customers may have considered renewable energy and found it too costly. SunEdison, thanks to innovative financing, made a compelling business case that saved customers money, offered a zero upfront cost option, and reduced energy risk. The company has grown to become North America's largest solar energy services provider. Similarly, some energy service companies have enjoyed success as a result of performance contracts, often signed with government

clients, which emphasize zero upfront costs and a shared savings model.

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Strong strategic positioning, when paired with innovative business designs, both threaten current business designs and provide opportunities for energy and utility companies to find new growth in green energy markets. Those firms that ignore powerful green mega-trends risk seeing value migrate to competitors. ❖

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Oliver Wyman's Energy Practice

Oliver Wyman's dedicated consultants have significant experience in the energy and utilities sector. Our clients have included more than 75 electric and natural gas utilities in North America and Europe, as well as a range of unregulated service providers to energy companies and utilities.

We have worked extensively with clients on the development and execution of innovative green strategies. Based on our deep experience in the energy and utility industries, we tailor our work to a client's unique needs, risk profile, and growth objectives, with the goal of optimizing value creation.

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