



# Sustainable San Diego

Tapping the Energy of Innovation

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**Rick Urban**  
Quality Controlled  
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**SDSU's new  
Student Union**



Solar electric panels are among the many energy-efficient systems Qualcomm Inc. employs to reduce utility costs and curb use of fossil fuels.

## Santee Manufacturer QCMC Completes Inaugural Program on Sustainable Practices

■ By Tom York

Rick Urban, a top executive at Quality Controlled Manufacturing Inc. (QCMC) in Santee, is always seeking better ways to keep his complex machining business on the leading edge of new practices and processes.



With innovation top of mind, QCMC recently completed an inaugural six-month sustainability program under the auspices of San Francisco-based consulting firm True Market Solutions in partnership with San Diego Gas & Electric Co.

Two QCMC employees met with representatives from eight other businesses in a "sustainability circle" to find new sustainable ideas such as installing sustainable lighting in the 65,000-square-foot shop,

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# TAKE CHARGE OF YOUR ENERGY AND SAVE

## Finding the Right Combination of Technologies is Key to Avoiding Financial Risks

■ By Terry Clapham

When Qualcomm Inc., decided to take greater control of energy consumption at its San Diego locations, the technology selected was combined heat and power (CHP) gas turbines, among the most efficient energy sources available because in producing electricity it also provides thermal energy.

Today, Qualcomm's three CHP systems deliver more than 13.5 megawatts of reliable, ultra high-efficiency electricity that meets up to 90 percent of building needs and produces waste heat to run absorption chillers that provide cooling for the facilities and data centers. The company's satisfaction with the systems has resulted in a decision to add another 4.3-megawatt CHP system in 2014,

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## Organizations Join Together in Innovative Sustainability Circles

■ By Marion Webb

Last week, representatives from nine handpicked small- to mid-size San Diego organizations met with local experts to learn how they can create sustainability and long-term success by "doing more with less."

Elliot Hoffman, founder and CEO of San Francisco-based consulting firm True Market Solutions (TMS) which together with San Diego Gas & Electric Co. (SDG&E) created the sustainability circle program to help small- to mid-size businesses inspire changes in the environmental, social and economic aspects, said that the program's early successes are already visible.

"The goal of the program is to help companies improve their profitability by fully embracing and embedding sustainable business practices," Hoffman said. "There is a myth that sustainability will cost you a lot of money when in truth, it will make you money."

TMS persuaded California's utility companies—SDG&E, Pacific Gas and

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## SDSU's new Student Union Will Be a Flagship for Green Technology

■ By Beth Downing Chee

The new Student Union at San Diego State University is taking the concept of "going green" to new heights with the installation of a green roof.

The LiveRoof Green Roof System was installed by Florasource Limited and covers a 1,382 square-foot space on the roof adjacent to the building's dome which will soon be a campus icon.

"The new Aztec Student Union was envisioned from its earliest planning stages as an exemplar of the most rigorous standards in environmentally sensitive design and construction," said

Robert Schulz, university architect and associate vice president of operations.

"The roof of the new union is outfitted with highly reflective roofing materials to reduce heat load; photovoltaic panels that generate a portion of the building's electrical needs; and a rooftop garden that both slows runoff from the roof and tempers the space underneath from external temperature swings," Schulz continued.

The green roof is just one of the energy

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This is the first in a new series of monthly supplements highlighting the region's sustainable business practices and the economic opportunities emerging in resource management, renewable energy and engaging corporate culture for a more efficient, profitable bottom line.

For information on how you can participate in this project and sponsorship availability contact us at: 858.277.6359 or email bbaranski@sdbj.com

## Circles:

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Electric Companies, Southern California Edison and Southern California Gas—to invest in the concept. SDG&E helps TMS identify local groups that would benefit from the program, and agreed to pay 75 percent of the \$7,500 up-front investment each firm makes to become a member of the sustainability circle, Hoffman said. In addition, TMS charges each firm a flat rate of \$1,875 for running the program, including hiring the sustainability experts and coaches.

The first San Diego sustainability circle comprised nine local companies, including Ken Blanchard Cos., a developer of leadership training programs for large corporations (350 local employees); the Balboa Park Cultural Consortium, (1500 employees); Carlsbad-based flower grower Mellano & Co., (250 employees); and Santee-based machining business Quality Controlled Manufacturing Inc. (QCMI) (100 employees); MG Properties, (60 employees); Hunter Industries, Irrigation and Control Manufacturer, (900 employees); North County Health Services, (500 employees); Mitchell Industries, (2000 employees); and CDC Small Business, (100 employees). These firms completed the first San Diego-based sustainability circle on Dec. 16, 2013 and came up with a total of 246 initiatives with 75 being gas and electric-specific, Hoffman added.

“This is a very action-oriented program,” Hoffman said. January 15th marked the third session of the second sustainability circle with nine San Diego-based organizations, including San Diego’s Anthony’s Fish Grotto restaurants;

### This is how it works:

- A sustainability circle runs six months and includes nine to 10 organizations.
- Each business typically sends two managers to the monthly, all-day seminars where they learn from the sustainability experts, TMS’ coaches and each other.
- During this time, each company typically develops 25 initiatives they can implement into a company-specific action plan.

“Each of the sessions deal with different initiatives that the companies can implement and around different subjects,” Hoffman said. “We bring in local experts that talk about lighting, water, how to make products that use less packing and how to make real change.”

QCMI, for instance, calculated that by investing a total of \$850,000—the bulk of which will go toward converting to solar energy—it will save \$370,000 annually on becoming more energy and resource efficient, Hoffman said.

“Turning off all the electronics at night will save QCMI \$2,600 a year; going to double-sided printing will save more than \$12,000 a year and adding Big Ass Fans’ (fans) in their facility, can save them \$20,000 a year by cooling more efficiently,” he added.

Hoffman noted that the above figures are estimates, but said the action plan aims to give each participant a good analysis of the cost savings in materials and energy.

Doncasters Group Ltd., an engineering firm in Chula Vista; the City of Chula Vista; Neighborhood House; Cobham Defense Electronics; Monterrey The Natural Choice; and Francis Parker School in San Diego. By year-end, Hoffman hopes to run eight circles in San Diego; five in the Bay Area; and four in Los Angeles County.

“Our goal is to launch 40 circles in California this year alone,” Hoffman said.

Hoffman, whose passion about sustainability issues shines through, said it took time to persuade SDG&E and

other utility companies to buy into the program. Erin Collier, SDG&E’s communications manager, said that SDG&E and TMS worked together on integrating the energy efficiency resources and services available to SDG&E clients, such as On-Bill Financing and other incentive programs.

“Initial efforts focused on recruiting mid-sized business customers who would most likely benefit from the auditing process and assistance with identifying ways to save energy and cut costs with minimal

capital investment,” Collier said.

Hoffman credits SDG&E for being a large part of the program’s early success. “The utility companies have been generous to support their customers by making it almost free to them,” Hoffman said.

The participating groups, in turn, also need to be committed and willing to invest their time and money to implement the various initiatives. “It’s about changing the culture of the companies and being conscious of the resources they are using,” Hoffman said. “We want to help them change, so it becomes their natural way of doing things.”

Hoffman, a former small business owner, said he knows the challenges well. Together with his wife, Hoffman started a bakery in their Bay Area home kitchen in 1974. Working 24/7 the bakery Just Desserts grew to 350 workers. In 2003, Hoffman sold the business to a private equity fund. In 2004, he became a member of the San Francisco-based Presidio School of Management, which runs a graduate program in sustainability management.

“I saw that the world of sustainability was growing in the United States and there was a lot of focus on the larger companies where the money is,” he said. “I took my passion for smaller companies and attached sustainability to create a company that is devoted to small to mid-size companies.”

He founded TMS in 2011 and now has 12 employees. For 2014, he hopes to reach \$3 million in revenues, up from \$400,000 in 2013. He expects the rising demand for sustainability circles will be the driving force behind TMS’s own sustainability.

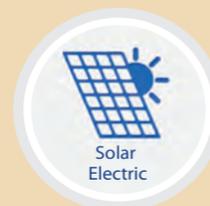
At the same time, Hoffman knows he has a big task ahead. “It will take another generation or two before real change is being made,” he said.

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COMMERCIAL BANKING

# Flagship:

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conservation features designed into the Student Union with the goal of reaching LEED Platinum certification, the highest rating for green buildings given by the U.S. Green Building Council.

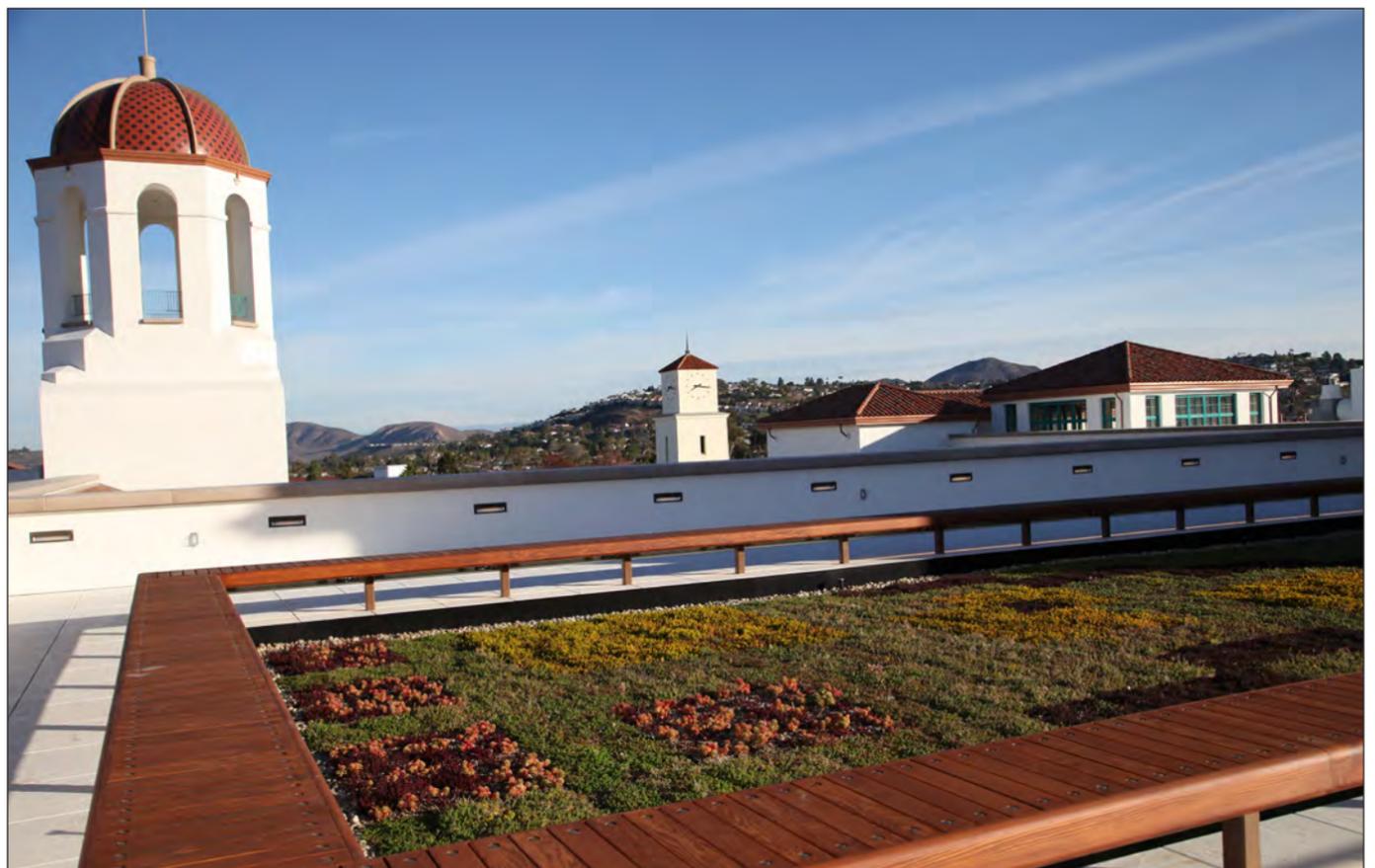
"This rooftop is unique," said Tom Hawkins, owner of Florasource and the Southern California representative of LiveRoof. "All of the storm water runoff, including from the green roof area, will be directed to three large 50,000-gallon tanks resting below the inner courtyard at ground level. This water will be stored for reuse in the landscape, including irrigation of the green roof as needed."

The plants for the green roof are flowering succulents chosen specifically for their resistance to the harsh conditions a rooftop in San Diego will face. Though the roof will be closed during normal operating hours, guests will be able to enjoy the garden during special events and activities held at the union.

SDSU will "Welcome Home" the Aztec community with the grand opening of the Aztec Student Union on March 7, 2014. The 206,000 square-foot "campus living room" will be the site for special events during The "Grand Dedication Week" March 3 through 8.

Submitted by San Diego State University.

Beth Downing Chee is media relations manager for San Diego State University. Article photos courtesy of SDSU.



## SDSU's new Student Union's Sustainable Features Include:

1. Nearly 80 percent of the materials from the original student union, Aztec Center, have been recycled or will be reused in Aztec Student Union.
2. Wood used in the feature wall of the Café Dining area is reclaimed from a previously demolished structure and has been given a second life in this new facility. This wood qualifies as 100 percent recycled material.
3. A minimum of 50 percent of all new wood on the project (not including reclaimed wood in the Dining Hall and any wood from the old sycamore tree) was specified to achieve Forest Stewardship Council (FSC) certification.
4. All wood floors on the project are actually



not wood, but bamboo. These highly durable compressed strand-woven bamboo floors qualify as a rapidly renewable material, made from plants that are typically harvested within a 10 year or shorter lifecycle.

5. Composite wood, agrifiber products, and laminating adhesives used in the project contain no added urea-formaldehyde resins, improving indoor air quality and reducing occupants' exposure to carcinogens and irritants in the indoor environment.
6. Natural daylighting and operable windows which reduces dependence on artificial lighting, increases ventilation effectiveness and control.
7. Solar panels for on-site renewable energy to reduce carbon consumption.

# Practices:

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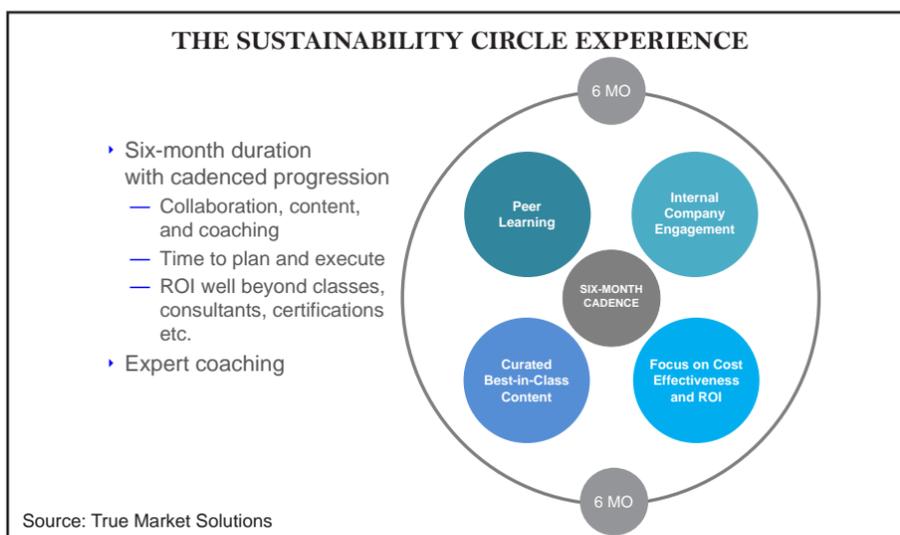
and changing capacitors that control the flow of current to the company's machines for precise control of electric consumption. QCMC workers also were instructed to switch off equipment when it was not in use, another idea that came out of the monthly meetings. The company even went so far as to print needed documents on two sides of the paper instead of one, and looked at ways to reduce the overall volume of printing.

"The idea was to reduce our carbon footprint," said Urban, who holds the titles of COO and CFO. "But reduce it in ways that made financial sense. We



wanted to take steps that related to bottom line profits."

"We looked at what other companies were doing, such as installing motion sensors to turn lighting off when not needed," he added.



Following the monthly meetings, QCMC's staff closely examined its processes to develop ways to reuse waste material from manufacturing that has previously been thrown into the recycling bin. For example, waste material from fusers (equipment used to bring air into an auxiliary generator on board an aircraft) is now used to make another part, saving money and boosting profits.

"We figured out how to cut the center out of the fuser, and make another part from it," he said. "We were previously able to recycle that material, which was good, but now we've come up with a higher use."

QCMC specializes in producing components with complex shapes and contours all with a high degree of quality required

for precision equipment. Customers come from aerospace, heavy equipment industries, oil and gas and power generation industries as well as the military. To name one product, QCMC makes a special door for passenger jets modified to carry freight. The door allows the flight crew to enter the aircraft from underneath the cockpit.

"The aerospace industry had been in a down cycle for quite some time, but is now coming out of that," said Urban. "And this is trickling down to us." QCMC does business with so-called Tier 1 suppliers to the two major aircraft makers, Boeing and Airbus. Those Tier 1 customers include \$13 billion UTC Aerospace Systems, which emerged after the merger of Hamilton Sundstrand and Goodrich.

QCMC is taking the lead along with

many customers who already have sustainability programs in place.

The 36-year-old QCMC was named one of the San Diego Business Journal's fastest growing private companies in 2012, coming in at 69 on the list of 100, and reached another milestone about the same time when the company announced the hiring of its 100th employee. In November 2012, the San Diego Society for Human Resource Management honored QCMC for its workplace practices, an award based on nominations from its employees.

Urban said adopting sustainable practices is part of an overall approach to increase sales and profits.

"As a manufacturer, we're always asking how to do it more efficiently, so getting involved with an outside sustainability circle, we felt like we would get outside views of what we were taking on," he said. "We wanted to see what other people were doing."

"Our customers provide us feedback, since they're trying to do the same thing," he added.

QCMC has installed evaporators to pull hazardous materials from water used in the manufacturing process into a dry product. Trucks no longer have to haul the toxic water in drums to a treatment facility. "Now we just have to deal with the residue," he said.

Urban said sustainable practices have become important with water and power in short supply in drought-stricken Southern California. "It's what our customers have come to expect," he said.

# Energy:

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according to Gail Welch, Qualcomm's senior sustainability manager.

"We've learned that executing significant energy investments requires transparency among corporate staff, access to data and energy experts who are on your side that can navigate the clean energy landscape with confidence," Welch said. "Projects like this are an integral part of Qualcomm's efforts to be more sustainable by increasing energy efficiency and reducing our carbon footprint while cutting costs."

While small- or medium-sized business may not have the same scale of needs or resources as an international telecom-

*"CCSE was an invaluable member of our solar project team," said Allen Carlisle, general manager for Padre Dam Municipal Water District. "We're confident that without CCSE's counsel and support, the results of our project would not have been so favorable."*

munications titan, there are many readily available ways to cut energy use, save on utility bills and be more environmentally friendly. The key is finding a balance of energy efficiency, renewable energy and utility rate choices that align with your business goals and expected return on investment.

Unfortunately, business owners and managers often feel overwhelmed when considering energy efficiency and renewable energy projects due to the abundance of options and the pitfalls of risky decisions. That's because today's landscape of utility tariffs, incentive programs, tax credits and emerging technologies can be confusing and intimidating.

In the San Diego region, businesses can look to experts at the California Center for Sustainable Energy (CCSE) for help in navigating the process of identifying strategies for efficient and clean energy solutions. As an independent, not-for-profit organization, CCSE assists businesses in assessing the technical, operational and financial merits of energy projects.

"CCSE offers businesses, building owners and facility managers unbiased, independent information that has only the best interests of our clients in mind," said Jeremy Del Real, a CCSE energy engineer. "Our strength lies in discovering solutions that will be not only cost effective to implement, but also provide shortened project payback periods."

Del Real points out that all projects should begin with implementing energy efficiency measures that not only reduce consumption and utility costs, but also lower power requirements so that self-generating systems can be scaled down to create even greater savings.

CCSE examines four basic technology areas to help business owners and managers evaluate and implement clean energy projects. Also listed are the available rebate programs that reduce up front costs. In addition, for most technologies there are federal tax incentives or renewable energy tax credits.

## Self-Generation

Self-generation refers to technologies that produce power on-site to help offset your electrical load. It's local electricity produced where it's consumed. There is



a wide range of self-generation technologies, and the one that's right for you depends on your unique load profile and energy objectives.

In San Diego, CCSE provides technical and financial assistance to businesses interested in wind, waste energy recovery, pressure reduction turbines, fuel cells and advanced energy storage as well as CHP. The Self-Generation Incentive Program offers substantial cash incentives based on the technology installed, the fuel used and the generating system capacity that range up to hundreds of thousands of dollars or more.

## Solar Water Heating

Solar water heating systems capture the warmth of the sun, transfer that heat



to water, and work with a conventional water heater or boiler to help it use less energy. Retirement communities, restaurants, gyms, hotels/ motels and other businesses such as commercial dishwashers and heavy duty laundries demand high volumes of heated water and can benefit greatly from installing a solar water heating system. In addition, solar thermal systems are used for industrial processes, building space heating and cooling as well as other uses.

CCSE issues rebates for solar water heating and other solar thermal applications through the California Solar Initiative - Thermal Program that can make purchasing and installing a system considerably more affordable. Rebates also are available for solar heaters at commercial swimming pools. Depending on the system installed and the estimated energy savings, rebates for replacing natural gas water heating systems run up to \$500,000.

## Solar Electric Systems

Solar photovoltaic (PV) systems, also known as rooftop solar, are a reliable and



effective way to lower or eliminate monthly energy bills and significantly reduce a company's carbon footprint. The cost of solar PV has decreased by nearly 50 percent since 1998, with commercial systems typically costing \$3-7/watt installed—the larger the system, the lower the cost.

CCSE offers California Solar Initiative cash rebates for on-site PV for commercial, industrial and agricultural installations



that vary in value depending on whether the rebate is based on expected output or on actual performance. While the rebates have declined with the cost of solar, the long-term financial value of solar PV is still very substantial.

## Clean Vehicles

If your company owns one car or a fleet of vehicles, you should consider clean vehicle options that offer fuel savings and less tailpipe emissions. Alternative fuel vehicles, ranging from passenger cars to heavy-duty trucks, are particularly well suited to commercial use because they provide lower operating and maintenance costs.

As statewide administrators of the Clean Vehicle Rebate Project, CCSE issues cash incentives of up to \$2,500 for purchasing or leasing certain zero-emission vehicles. CCSE transportation experts also are available to help businesses and government agencies to green their vehicle fleet operations with customized analyses that can show the benefits of a

cleaner fleet such as satisfying environmental regulations and achieving cost savings.

## Why CCSE?

CCSE staff offers unbiased, expert advice and guidance regarding energy management decisions that help businesses find the right solutions. These technical advice services are especially ideal for companies or institutions with large facility portfolios and a motivation to become more environmentally friendly and energy independent. While CCSE is a statewide organization, it specializes in energy services for the San Diego region.

*Submitted by California Center for Sustainable Energy*

*Terry Clapham is manager, energy advisory services for CCSE.*

*For more information, contact CCSE at [www.energycenter.org/greenbusiness](http://www.energycenter.org/greenbusiness) or call 858.244.1177 to speak to an energy expert about our business resources.*

*Article photos courtesy of CCSE.*

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### KEYNOTE SPEAKER

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