

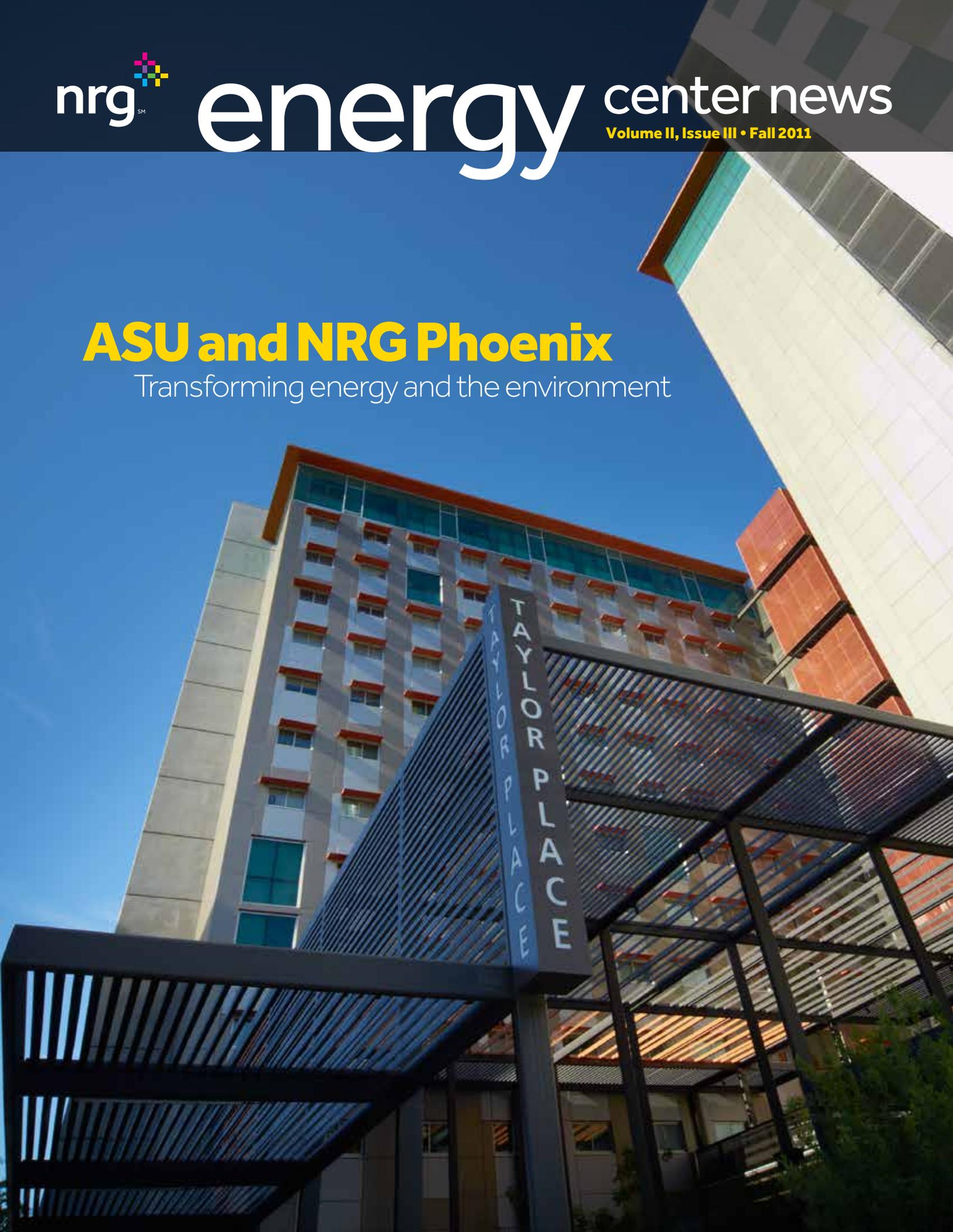


energy center news

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ASU and NRG Phoenix

Transforming energy and the environment



ASU, NRG Phoenix on Course for Energy Savings

THE SCENE PLAYS out every fall at college and university campuses across the country: students make the big move to campus to begin classes and take another step toward graduation.

At Arizona State University (ASU) this year, more than 1,000 students moved into Taylor Place (shown on cover), a 13-story residential community on ASU's Downtown Phoenix campus. The building is air conditioned by NRG Energy Center Phoenix's district cooling system, which also serves three other ASU buildings downtown.

NRG Phoenix also operates the combined heat and power (CHP) plant called *Sun Devil Energy Center* at ASU's Tempe campus and a chilled-water plant that serves six buildings on ASU's Polytechnic campus in Mesa.

ASU has been a customer since 2005, when it contracted NRG Phoenix (then Northwind Phoenix) to design, construct and operate a CHP+NRG® plant for the growing Tempe campus. "We had plans to significantly expand our research efforts, and we needed to provide highly reliable energy service to those new energy-intensive buildings," says David Brixen, Associate Vice President of Facilities Development and Management at ASU.

NRG Phoenix Serves ASU

DOWNTOWN CAMPUS

Serves four buildings through downtown district cooling network that has a total capacity of 40,000 tons of chilled water

TEMPE CAMPUS

Serves ASU's Tempe campus buildings in parallel with ASU's central plant. Operates *Sun Devil Energy Center*, a combined heat and power plant

- ❖ 8 megawatts (MW) of electricity
- ❖ 10,000 tons of chilled water
- ❖ 80,000 Mlb/hr of steam
- ❖ 4 MW of emergency diesel generation backup
- ❖ Ability to double existing capacity

POLYTECHNIC CAMPUS (MESA)

Serves six buildings. Operates one chilled-water plant

- ❖ 1,200 tons of chilled water, with potential expansion to 2,400 tons



ASU's "Ask Me" crews were on the job at Taylor Place downtown Phoenix (shown on cover) to help students move in at the end of August. ASU has more than 70,000 students on its four Phoenix-area campuses. NRG Phoenix serves three of those campuses.

"We decided that installing CHP would fit our sustainability goals, but since we didn't have the in-house expertise to run a turbine plant, we turned to an outside firm to make that happen. We've established a good working relationship with NRG Phoenix's operations staff, and they closely coordinate their efforts with the ASU crew that runs our central chilled-water plant and storage tank."

The *Sun Devil Energy Center* supplies electricity and backup electricity directly to four buildings and chilled water and steam to ASU's distribution system to serve 88 Tempe campus buildings. Chilled water is used for air conditioning; steam is used for heating and research.

ASU's Interdisciplinary Science and Technology Building 4 is being built next to NRG Phoenix's CHP plant and will start taking service in early 2012. NRG Phoenix also serves ASU's *Global Institute of Sustainability*—itself an eco-friendly model of sustainability with wind turbines powered by thermal updrafts, skylights

and energy-efficient light fixtures, and high recycled content in carpet and furniture. (See insert for more on ASU's sustainability efforts.)

Since 2002 ASU has invested a total of \$80 million in energy conservation measures on its four campuses. "Even though we're adding new buildings, our energy consumption is going down on a per-square-foot basis," explains ASU's Brixen. "We have reduced consumption by 20% per square foot compared to 2002." ASU has retrofitted exterior building lighting, installed LED lighting in 90% of the parking garages, replaced 10 chillers in the Tempe central chilled-water plant, installed motion sensors in low-volume use areas, converted to variable-frequency drive systems within buildings, switched from pneumatic to electronic controls, and more.

"ASU's goal is to transform its energy consumption," says Brixen. NRG Energy Center Phoenix is honored to play a role in that transformation.

What is CHP+NRG®?

NRG provides combined heat and power service at locations across the country. Combined heat and power—also known as cogeneration—is a way to increase power plant efficiency. Standard power plants are only about 30%-33% efficient when they produce electricity. Two-thirds of the fuel used in the electric production process ends up being rejected or "wasted." A combined heat and power plant still produces electricity, but captures that waste heat and uses it to heat or cool buildings in a surrounding area through a district energy system.

Giving Back to the Community: NRG an ally in learning

IN PHOENIX And across the country, employees of NRG Energy Inc. rolled up their sleeves June 7 for the company's Global Giving Day, volunteering their time to help charitable organizations in their communities. Several employees from NRG Energy Center Phoenix helped out at Learning

Ally, an organization that records textbooks and literature for students, veterans and lifelong learners who cannot read due to blindness, visual impairments, dyslexia or other learning difficulties.

Our employees helped direct and record the audiobooks and lent a hand in other production and in-studio processes. Frank Cosentino, NRG Phoenix Operation and Maintenance Manager, said afterward, "The time I was able to contribute was not nearly as important as the contribution that Learning Ally makes in our community. I was humbled by simply reading a book aloud, and knowing that it will help thousands of physically impaired persons." Now in its fourth year, NRG Global Giving Day encompassed projects

for more than 30 organizations in 11 states this year. It is just one of the many employee-led efforts sponsored by the company's NRG Global Giving initiative. As part of this year's corporate-wide giving event, NRG Energy Center Phoenix was happy to support the work of Learning Ally. With 12 additional locations across the U.S., it serves more than 300,000 readers and maintains a collection of more than 65,000 digitally recorded audiobooks that is the largest of its kind in the world. Volunteer Mike Perfette, NRG Phoenix's Director, Operations and Facilities, reflected: "Working with Learning Ally increased my awareness of the services they offer—not only for the vision-impaired but for people with other disabilities such as autism or dyslexia where reading is a challenge. I had no idea there was such a need for Learning Ally in our community!" Frank, Mike and the other NRG employees were truly "allies in learning," helping give learners access to the same opportunities to succeed that others enjoy.

Photo Mike Perfette



General Manager Jim Lodge was one of the NRG Phoenix employees who recorded audio books to be used by clients of Learning Ally.

Making the Rounds: Paul Lopez, Senior Operator

YOU NEVER KNOW where you're going to find Paul Lopez. That's because as Senior Operator, Lopez is a "rover" and able to operate any of the three NRG Energy Center Phoenix plants and handle other responsibilities as needed. He serves as the operations team lead, ensuring all facilities are running efficiently and according to NRG safety standards. He also heads up weekly plant "walkdowns" and oversees all contractor work.

The opportunity to rove is what Lopez likes most about his job: "Being trained to run all the plants here is a highlight of my career," he explains. "Although I can't be everywhere at once of course, I like the chance to work with the different plants and people. It's challenging yet rewarding."

Previously, Lopez was employed by the state of Arizona as an HVAC mechanic, doing service and repair work in various buildings at the Capitol Complex, including the governor's office.

One of the reasons he took a job with NRG Phoenix was the challenge of working on a large district energy system. "The scale of the equipment was appealing," he

says. "Also, at NRG Phoenix, I enjoy contributing to operational strategy. I really feel a part of everything that happens and the people I work with are the best in the trade." Lopez has been with NRG Phoenix nearly

seven years.

Born and raised in Phoenix, Lopez likes to spend his free time with his family, camp, fish and enjoy the great Arizona outdoors.



Photo Tevie Photographic



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FROM THE GENERAL MANAGER

New Logo, Ongoing Transformation

AS PART OF HIS VISION to transform Arizona State University into a "New American University," ASU President Michael Crow described ASU as "one university in many places." In NRG's service to ASU, NRG Energy Center Phoenix has become one company in many places, providing chilled water and combined heat and power service to three of ASU's four Phoenix-area campuses.

ASU recently introduced a new logo for ASU Sun Devil Athletics. With this issue of our newsletter, we, too, debut a new logo, a symbol of NRG's commitment to offer the



NRG Phoenix's Sun Devil Energy Center was constructed in 2005 and has room to double its existing capacity to serve ASU's growing Tempe campus.

most innovative energy solutions to our customers. We also take the opportunity to share with you more about our service to ASU, one of the largest universities in the country.

It has been an exciting few years for our company. Just over a year ago, what was previously known as Northwind Phoenix became NRG Energy Center Phoenix LLC, a subsidiary of NRG Thermal, LLC, wholly-owned by NRG Energy Inc. This year brings another milestone: 10 years of operation in downtown Phoenix. As we near the end of 2011 and look ahead to 2012, it continues to be an exciting time to be a part of the NRG family.

Over the past few years, NRG has become a very different kind of energy company. While electric power generation is the foundation of the company's business, it has added products and capabilities in clean energy technology, electric vehicle (EV) charging infrastructure and selling renewable power directly to customers.

NRG is leading the way in changing how people think about and use energy. Its retail brands—Reliant Energy and Green Mountain Energy Company—offer customers ways to leverage smart energy and power from renewable sources. It

is building out EV charging networks so that EV drivers, through the eVgo division of NRG, have confidence they will not run out of power. It has also become the nation's leading developer of solar energy, building large solar fields in the Southwest and installing solar panels on commercial rooftops and at schools and sports stadiums nationwide. (See separate insert on the ASU PowerParasol™ Project.)

The company is committed to delivering more energy choices and cleaner energy solutions that enhance lives, improve businesses and communities, and build a sustainable future. NRG Phoenix does this by providing reliable, energy-efficient district cooling and combined heat and power service; serving as an avenue for you to access NRG's many energy-saving technologies; and giving back to the community it serves.



Photo: TeVe's Photographic

Jim Lodge, General Manager
Jim.Lodge@nrgenergy.com



ASU: Leading the way on sustainability

IN AN ICONIC ADVERTISING CAMPAIGN for Apple Computer®, Steve Jobs once urged the world to “Think Different.” Led by visionary President Michael Crow, Arizona State University (ASU) is most certainly thinking differently too—engaged in what Newsweek called in 2008 “one of the most radical redesigns in higher learning.” In recent years, ASU has fundamentally restructured and reinvented itself to better address 21st-century global challenges; a major part of ASU’s transformation is its focus on sustainability.



A Shining Example

Sustainability is the principle underlying the university’s learning, research and operations. It is the impetus behind ASU’s ambitious goal to expand solar energy installations to reach a combined 20 MW of solar power capacity on all four campuses by 2014. ASU is already the only single U.S. higher-education institution to already reach more than 10 MW of solar power-generation capability.

Among the university’s latest solar projects is the PowerParasol™ at the Tempe campus. Developed in conjunction with NRG Solar, a subsidiary of NRG Energy, Inc., the installation consists of solar panels arrayed above 800 parking spaces near Sun Devil Stadium, providing shade for vehicles and tailgaters while generating 2.1 MW of electricity. (See back for details.)

Across the Curriculum

Campus “solarization” is just one of ASU’s many strategies to operate more sustainably. Using combined heat and power (CHP) and district energy services from NRG Energy Center Phoenix is another. Such measures will help the university achieve a net-zero carbon footprint, the aim of ASU’s comprehensive Carbon Neutrality Action Plan. The plan identifies a wide range of carbon-mitigating actions, from reducing wasted computer power and developing wind energy to designing all new buildings to LEED® (Leadership in Energy and Environmental Design) Silver-level or higher certification

standards. All buildings constructed since the early 2000s have been certified at least LEED Silver.

ASU’s sustainability commitment goes far beyond campus operations, however. It extends to the university’s coursework,

research and outreach toward solving global problems. It also is part of each ASU employee’s performance evaluation. To lead university-wide initiatives, President Crow established ASU’s *Global*

Institute of Sustainability in 2004. In 2006, ASU opened the first-of-its-kind School of Sustainability that offers graduate and undergraduate degrees in sustainability.

Pushing for greater progress on sustainability, President Crow was a founding member and co-chair of the American College and University Presidents’ Climate Commitment in 2007. To date, more than 675 institutions have signed this campus climate neutrality pledge.

As ASU leads the way as a model of sustainability in higher education, NRG is proud to support the effort by providing the university with renewable solar energy and CHP/district energy service. We com-



Courtesy debarotolo architects.

Wind turbines on top of ASU’s *Global Institute of Sustainability* help generate electricity for the Tempe campus building.

mend ASU for its bold vision—for daring to think differently.

To learn more about ASU and sustainability, visit <http://sustainability.asu.edu>.



Courtesy ASU. Photo Mark Boisclair

ASU’s Bidesign Institute Building B is the first building in Arizona to earn a Platinum rating—the highest possible—through the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) Green Building Rating System™. The Tempe campus building receives electricity, cooling and heating from the *Sun Devil Energy Center* operated and maintained by NRG Phoenix.

Arizona State University/NRG Solar Power Parasol™ Solar Parking Shade Structure

QUICK FACTS:

- ❖ Located adjacent to Sun Devil and Packard Stadiums on ASU's Tempe campus.
- ❖ Has 2.1 megawatts (MW) of electricity capacity generating 3,500 MWh annually.
- ❖ Features 7,584 photovoltaic solar panels.
- ❖ NRG Solar, a subsidiary of NRG Energy, Inc., is the owner and operator.
- ❖ NRG has a 25-year, \$10.5 million agreement to provide electricity to ASU.
- ❖ ASU will purchase electricity generated at a flat rate during the term.
- ❖ Strategic Solar Energy, LLC is the developer of the Power Parasol™.

- ❖ Will shade 800 parking spaces and walkways totaling 5.25 acres.
- ❖ The 24-foot-high structure will provide nighttime lighting for improved security.
- ❖ Cell phone antennas, security cameras and electric vehicle charging stations can be incorporated into the structure.
- ❖ Has 64 potential sign locations for campus communications and advertising.
- ❖ Electricity generated each year will be equivalent to the annual consumption of 170 "average" Arizona homes.
- ❖ Will offset more than 8 million pounds of CO₂ annually.

PROJECT TEAM:

- ❖ Developer – Strategic Solar Energy | www.strategicsolarenergy.com
- ❖ Owner/Operator – NRG Solar LLC | www.nrgsolarenergy.com
- ❖ Architect – debartolo architects | www.debartoloarchitects.com
- ❖ Contractor – Hardison/Downey Construction Inc. | www.hardisondowney.com

