

Building for the Future



Net-Zero Energy buildings (NZEB) utilize energy efficiency measures to produce enough on-site renewable energy to offset energy consumed over the course of a year. NZEBs often feature high insulation levels, natural daylighting, and efficient heating, cooling, ventilation, and delivery systems.

Several verified and emerging NZEBs and retrofits exist in Arizona (right). They can be built cost-effectively while achieving energy savings of 50% to 90% through energy efficiency measures, and up to 100%+ savings by incorporating on-site renewable energy systems. NZEBs can reduce or nearly eliminate peak electricity demand (which is growing rapidly in many SW states) and reduce air pollution while occupants enjoy comfortable spaces and lower electric bills.



The REI Distribution Center in Goodyear features a 280,000-square-foot rooftop solar array. Learn more on page 2. Photo courtesy of REI Goodyear.

		Key
	Phoenix	(V) Verified (E) Emerging (C) Certified (R) Retrofit
	DPR Construction (V)	
	Fireside Elementary (E)	
	Green Learning Center (E)	
	MEC Northeast Campus (E)	
	Orangewood Middle School (E)	
	Pronghorn Ranch (E)	
	Vali Living Homes (E)	
	Goodyear	
	REI Distribution (C)	
Sierra Vista		
Colonel Smith Middle School (E)		
Tempe		
The Roosevelt (E)		
Glendale		
MEC Aviation Campus (E)		
Scottsdale		
Meritage Homes (V)		
Sasabe		
USFWS Federal Building (E)		
Casa Grande		
Frito-Lay Snack Factory (E)		
Tucson		
Armory Park Del Sol (C)		
Hawthorne House (R)		

*List as of 1/2/18.

Full list: <http://bit.ly/NZE18>
Source: *Southwest Energy Efficiency Project*

Leading the Way: DPR Construction

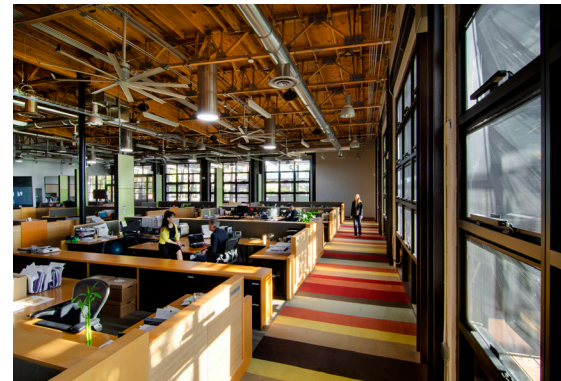
DPR Construction

222 N 44th St., Phoenix

Net-Zero Highlights:

- o Passive/active cooling
- o 87 operable windows
- o Four shower towers
- o 87-ft zinc-clad solar chimney
- o 79 kW-dc rated photovoltaic solar panel covered parking lot to control indoor environment naturally and produce energy onsite
- o A Lucid Building Dashboard® allows DPR to monitor and share building water and gas usage, lighting and power consumption, and photovoltaic energy production in real time

DPR Construction's Phoenix Headquarters was conceptualized as a net-zero workplace of the future. The project was led by SmithGroupJJR and repurposed a 16,500 sf, 28-year-old retail building in downtown Phoenix. The construction utilized recycled and reused materials and alternative ways to light and condition the space. In 2013, the office was certified as an NZEB by the International Living Future Institute. It was the first in Arizona and only the second in the U.S. to achieve NZEB certification. The Leadership in Energy and Environmental Design (LEED)®-NC Platinum, open-office structure features 58 work spaces, nine conference/training rooms, and gym/locker facilities. The building incorporates natural ventilation through the use of operable windows, shower towers, a solar chimney, and "Big Ass Fans" to reduce the building's power demand. The expansive window walls and 82 strategically positioned Solatubes® nearly eliminate the need for artificial daytime lighting 365 days a year.



DPR Phoenix office. Photo courtesy of SmithGroupJJR.

Source: <https://www.dpr.com/projects/dpr-construction-phoenix-regional-office>.

The REI Distribution Center in Goodyear is the only Net-Zero Energy certified distribution center in the country. At 40,000 sf, it is the second largest LEED Platinum-certified distribution center or warehouse facility in the U.S. The center features a solar rooftop array that produces enough energy to power the entire facility. It also utilizes a non-evaporative cooling system that saves millions of gallons of water every year. The center has a robust recycling program, approxi-

mately 97 percent of all materials at the center are recycled, and less than 3 percent of waste is sent to landfills. REI is also working with the community to restore the Verde River.

Source: <http://bit.ly/REIcenter>.



REI Goodyear
4877 N Cotton Ln., Goodyear

Net-Zero Highlights:

- o 280,000 sf solar array
- o Energy efficient lighting, conveyor, and water systems
- o Renewable powered A/C
- o Drought-tolerant landscaping with underground drip irrigation



The REI Distribution Center in Goodyear, Arizona is the only Net-Zero Energy certified Distribution Center in the country. Photos courtesy of REI Goodyear.

Becoming Net-Zero: Colonel Smith Middle School

Colonel Smith Middle School

5651 E. Smith Ave., Sierra Vista

Net-Zero Highlights:

- o Three wind turbines
- o Solar arrays and 90+ skylights
- o Layered daylighting approach that reduces artificial lighting use by 80 percent
- o Solar potable water heating
- o An Energy Dashboard allows student to track the building's energy use, as well as energy gained from on-site solar and wind

Colonel Smith Middle School (CSMS) is 88,693 sf and serves about 350 students in grades six through eight. Built by Turner Construction, it features solar panels, high-efficiency HVAC units and three wind turbines, which are all monitored via a central energy dashboard that sends information to students' devices in real time. Instead of classrooms, CSMS has Flexible Learning Environments, with STEM labs replacing science labs. The building's NZE certification is in progress. Shawn Rosenberger, General Manager of Turner Construction said in a press release, "Not only is this one of the few Net-Zero buildings in the country, the design is a total transformation from the typical classrooms where most of us went to school."

Source: <https://www.ftuachuca.k12.az.us/colsmith>

Learn more and get involved!

The Sierra Club works with other advocacy groups to promote greater energy efficiency efforts in AZ. Energy efficiency makes homes more affordable, reduces dependence on oil and natural gas, creates housing and construction jobs, and reduces water use and emissions of air pollutants that harm public health and contribute to climate change.



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Join our Energy Team!

Our energy team meets on the third Tuesday of every month. Please join our programs and field trips focusing on renewable energy, energy efficiency and much more. Everyone is invited to participate, no matter how much or how little you know about energy issues. See calendar for details: <http://bit.ly/AZcalendar>

For information and ways to get involved, contact Sandy Bahr at (602) 253-8633 or sandy.bahr@sierraclub.org.