

Project Profile

Pueblo clinic pursues zero energy for benefit of all

The health care principle “first do no harm” often brings patients to mind. But as medical facilities are extremely energy intensive buildings, more health care systems are pursuing zero energy building strategies to not only reduce energy costs, but to reduce their impact on the environment and to benefit the communities they serve.

Pueblo Community Health Center has a history of energy stewardship. Its Colorado Clinic, built in 2009 and designed by RTA Architects, was four times larger than the facility it replaced. Yet its per-square-foot utility expenses were lowered 25% due to energy-efficient design and a 50-kilowatt rooftop photovoltaic array.

In addition, the city of Pueblo adopted a resolution that sets a vision to use 100% renewable energy by 2035. As a leading health care provider in the community and a nonprofit, charitable organization that contributes to the quality of life in Pueblo, PCHC wanted to align its organizational sustainability goals with the community's goals. As a result, PCHC decided to pursue the goal of a zero energy building when the opportunity arose to construct its new East Side Clinic. The new clinic, which broke ground this month, is the first emerging zero energy outpatient health care clinic in Colorado, according to the New Buildings Institute. Verification will occur after the requisite 12 months of measurement and verification after the clinic's opening.

The New East Side Clinic

Conveniently located in one building, the new East Side Clinic will provide much needed health care services to serve the large number of PCHC patients on Pueblo's East side. Our firm worked closely with PCHC leadership, staff, stakeholders, and Pueblo's East Side community to create a design that will benefit the area for years to come. The new three-story health clinic features extensive natural light, a brick exterior reminiscent of Pueblo's historic buildings and biophilic



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design elements. It will have 78 exam rooms that will offer a full range of medical services, open and collaborative clinical pods, meeting space and shell space for future expansion. A bright open layout, including a three-story atrium, paired with exceptional energy-efficient design and on-site energy production, will provide Pueblo's East Side with a truly state-of-the-art new clinic.

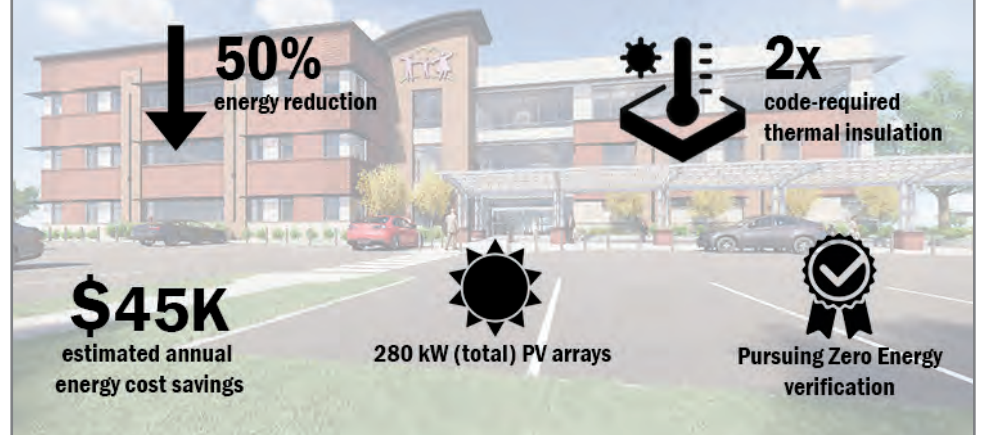
Throughout the course of numerous user group and community meetings, the team identified the pursuit of zero energy as a primary goal to reduce greenhouse gas emissions, significantly reduce energy use and operating costs, increase staff recruitment and retention, enhance fundraising efforts, become a catalyst for change in Pueblo, and to set a new standard in outpatient clinic design. The pursuit of zero energy was chosen over LEED, WELL Building Standards and other sustainable building certifications due to its ease of measurement and focus on whole-building performance and carbon footprint reduction.

Establishing Expected Energy Usage

The pursuit of zero energy for the new East Side Clinic began in the early stages of design with a fully integrated process and the development of a zero energy road map with the architect, MEP engineering consultant Farnsworth Group and PCHC leadership. Donald Moore, CEO of Pueblo Community Health Center, commented, “Once we started the zero energy discovery process, the enthusiasm for the goal became infectious. Our board was excited. Management was excited.”

The first step was the development of the energy model target. This target was initially based on a 50% reduction of the EnergyStar Baseline energy use for a

Pueblo Community Health Center East Side Clinic



RTA Architects

Pueblo Community Health Center's new East Side Clinic is pursuing zero energy through the combination of on-site energy production, an energy-efficient building envelope and Energy Star owner-selected equipment.

60,000-square-foot outpatient facility. The resulting overall goal for the building's site energy utilization intensity was 43.0 kBtu per sf per year.

The next analysis included a review of PCHC's Colorado Clinic, which showed that it operated with a relatively low average site EUI at 37.3 kBtu per sf per year. This was achieved by the design of a tightly constructed, well-insulated building envelope as well as high-efficiency glazing. Onsite energy production included the 50 kW roof PV array, which provides 76,000 kWh per year.

Using these two analyses, energy performance goals were set for the new East Side Clinic and an energy model was produced early in the design process. The expected EUI of the new East Side Clinic was estimated to be 24.6 kBtu per sf per year.

The Path to Zero Energy

Zero energy is accomplished when the total site energy use is offset by total site energy production, and each team member had

specific areas of responsibility for achieving the zero energy goal. The owner, PCHC, had the primary responsibility for selecting and utilizing energy-efficient equipment inside the building to lower the amount of energy required and to reduce heat given off by that equipment. The owner's commitment to purchase Energy Star-compliant computers, washers, dryers, IT equipment, refrigerators and other equipment will ensure the internal loads maintain low energy use.

As the architect, we had primary design responsibility for the building envelope. A tight building envelope, including walls at R-25 and the roof at R-60, was critical to energy savings. In addition, fiberglass windows were specified, which will provide increased performance above standard dual-pane aluminum storefront windows at a similar price. Coupled with the walls and roof, the building envelope accounted for approximately 28% annual energy savings. Other design features included exterior sun shades, a canopy over the entry, and an electronic display screen for the lobby to provide information on the zero energy goal to visitors, patients and staff, and to show the energy usage of the facility in real time.

It was determined PV arrays would again be one of the most readily available technologies for on-site energy production. Its low maintenance, high reliability and ability to provide backup when necessary made it an attractive approach for Pueblo Community Health Center. When placed atop the parking canopy and on the building's roof, the technology also will also provide a visible and commonly understood commitment to renewable energy. The PV arrays, combined with the energy efficient design, equipment and building envelope will achieve the goal of zero energy for the new East Side Clinic.

Moore said, “It (zero energy) is an aspect of the project I mention every chance I can, and I think it will shine a very positive light on PCHC and the Pueblo community. I'm very proud that we are delivering this project and achieving such impactful beneficial goals as a result.” ▲



RTA Architects and Pueblo Community Health Center

Pueblo Community Health Center's new East Side Clinic, to be completed in 2021, is the first outpatient health care clinic in Colorado listed as emerging zero energy, according to the New Building Institute.