



Photography courtesy of Jason Quigley

A HOLISTIC APPROACH TO SUSTAINABILITY

NEW ENERGY-EFFICIENT CAREER CENTER IN PORTLAND BRINGS COMPREHENSIVE SUPPORT TO THE COMMUNITY.

Since 1998, the Portland Community College (PCC) Opportunity Center at 42nd Avenue has worked to support a diverse job-ready workforce by providing customized training, career exploration and educational opportunities. Having previously operated out of an old, retrofitted Safeway grocery store with very limited windows and daylight, the staff and clients were eager to move into a new building.

The new Opportunity Center will now offer their workforce development programs alongside affordable housing, childcare and a health clinic to help position their clients for careers that offer greater economic mobility. The two-story facility is situated between the Cully and Concordia neighborhoods in Northeast Portland. It is an example of how sustainability can be applied to not only the structural components of a building, but also the mental, emotional and physical success of its residents.

OPPORTUNITY CENTER AT 42ND AVENUE

Energy-Efficient Features

Passive Systems

- High-performance envelope including window glazing, insulation and shading
- Daylighting strategies

Active Systems

- LED lighting with optimized controls
- Radiant heating with energy recovery ventilator and DOAS
- High-efficiency water heating

“The Opportunity Center exemplifies sustainability in a more holistic way. It’s not just about one element, but about the broader elements of sustainability, starting with the building, and then the people, and then the programs and then the community around.”

— Katrina Shum Miller of Lensa Consulting

DESIGN WITH EQUITY

Many of the students and clients who come to the Opportunity Center live in Cully or North Portland. Stakeholders spent months canvassing and speaking with local nonprofit groups to understand specific needs. “It was really important to us that we fostered a relationship and that the community embraced and supported what we did,” explained Rebecca Ocken, Director of Planning and Capital Construction at PCC.

The new Opportunity Center was built utilizing research in trauma-informed design, an architectural movement that aims to alleviate the physical and mental discomforts associated with trauma. These design principles are evident throughout the building. For example, many of the rooms feature exposed wood to warm up the space. Soft forms and rounded corners in both the interior and exterior help produce a calming environment and put people at ease. Additionally, navigation is very easy and simple to prevent clients from feeling lost, and daylight and window views are plentiful to help prevent occupants from feeling cramped or trapped.

The second phase of construction will include a health clinic operated by Multnomah County. In the third phase, PCC will collaborate with Home Forward to build 84 units of affordable housing with a green courtyard that will connect housing to the career center. PCC will also collaborate with Native American Youth and Family Center (NAYA) to develop a daycare.

“The design was guided by the principle of critical race theory, design justice and trauma-informed design,” said Jeanie Lai, architect from Bora Architects. “So, very equity focused.”

LEADING THE WAY TO LEED

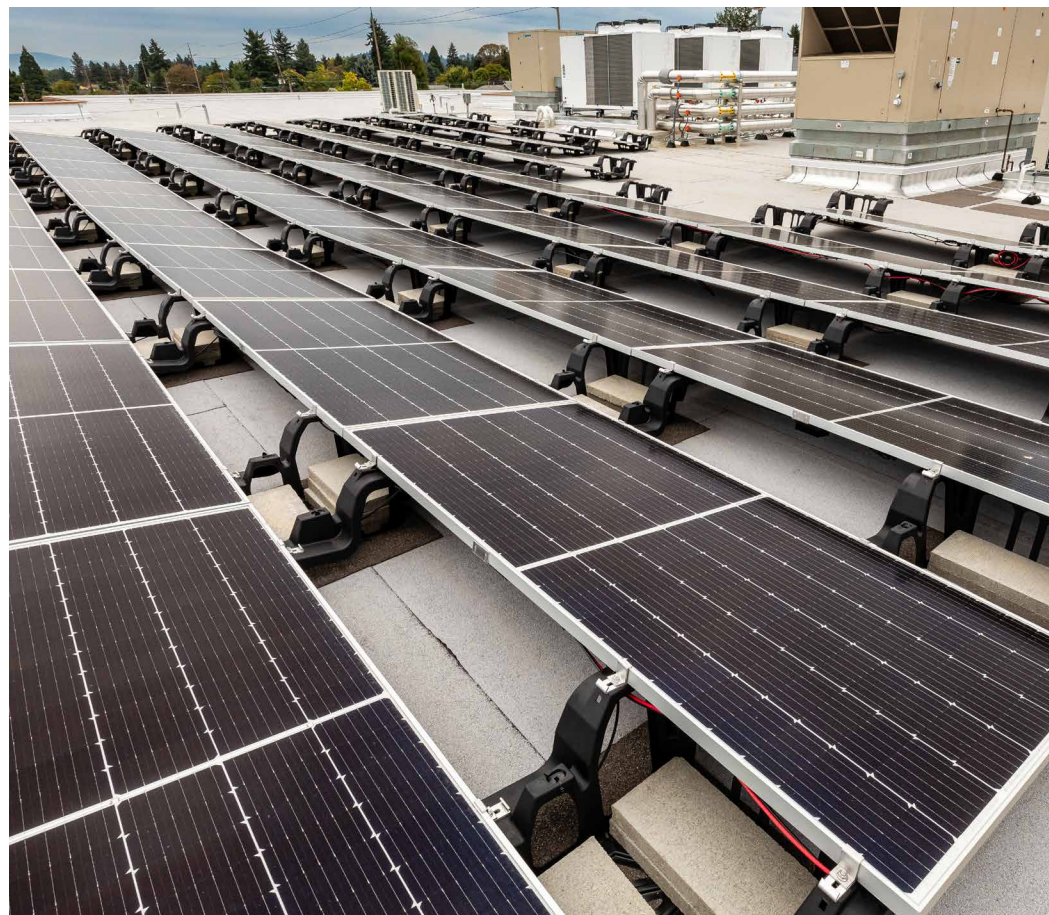
One of the ways the building was able to meet LEED Silver certification was through the use of locally sourced cross-laminated timber (CLT), a lightweight building material that is strong, versatile and has a low environmental impact. “Going toward

the CLT structure was driven in part by the goals of the project in the broader sense,” Shum Miller explained, “but also to help the project meet LEED Silver certification.”

HERE COMES THE SUN

Dedicated to informed and collaborative design, Cherry City Electric installed 216 PV panels providing 104.8 kW on the rooftop of the Opportunity Center. They were tasked with building a rooftop system with minimal penetrations to ease any concern from the building owner about future leaks.

“We needed to design a fully ballasted system that could simply go on the roof without any penetrations into the deck,” said Jared Bazar, director of engineering at Cherry City Electric, an Energy Trust solar trade ally. “Working with the structural engineers and racking manufacturers, we had





Energy Efficiency-Related Savings

- \$135,700 in Energy Trust cash incentives
- \$21,200 in estimated annual energy cost savings
- 265,500 annual kWh savings

Solar Installation

- 104.8 kW system capacity
- 122,940 annual kWh generated
- \$9,800 in estimated annual energy cost savings

Incentive Support

- Early design and technical assistance
- Commissioning design review
- Modeled savings installation

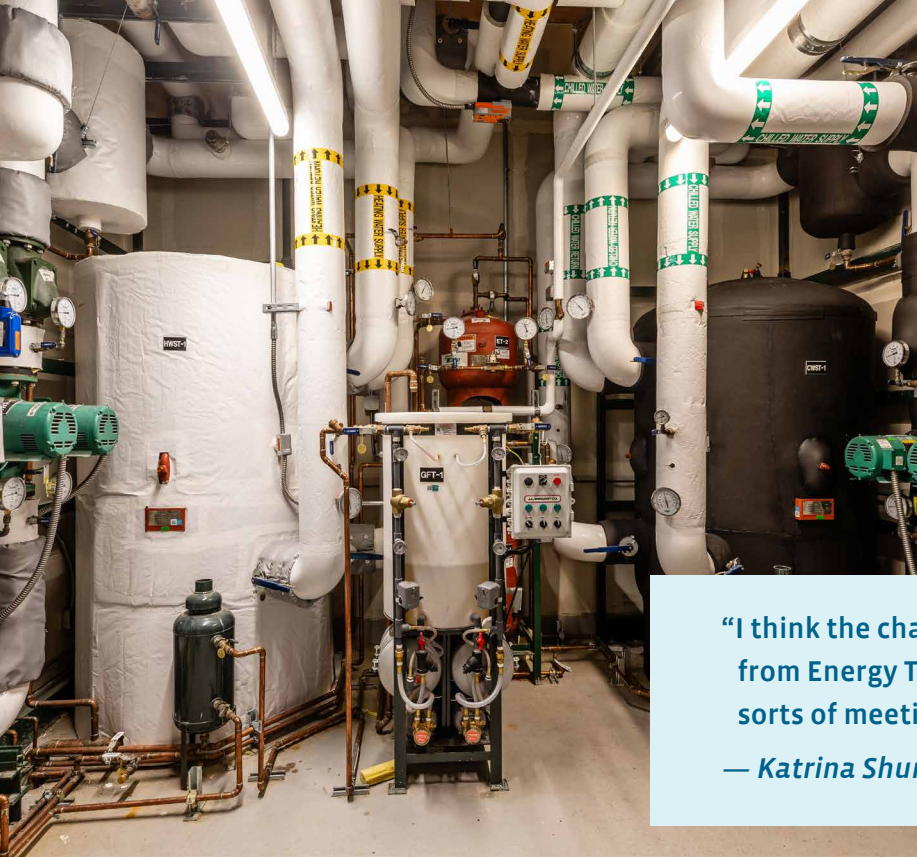
a compliant system from a seismic and wind standpoint while meeting the owner's request for limiting or eliminating penetration." The panels will generate 122,940 kWh annually and are expected to save the building an estimated \$9,800 per year.

Sunlight wasn't just a consideration for solar energy, it also played a huge role in design. The previous Opportunity Center was in a window-free environment, so the team was even more determined to incorporate plenty of daylight and window views. The generous windows led the architects at Bora to design a high-performance envelope, which included window glazing, insulation and shading to reduce portions of the heating and cooling load.

HIGH EFFICIENCY, MAXIMUM COMFORT

"A big push early on was to get a higher efficiency hydronic system in place," mechanical engineer Andrew Craig of Arris Consulting explained. His team was able to design an air-to-water heat pump system that charges storage tanks with either heated or chilled water to serve a combination of different high-efficiency end uses. Radiant slabs at the perimeter provide heating for the building, and a rooftop heat recovery ventilator distributes 100% outside air to sensible fanned terminal units.

The outside-air heat-recovery ventilation system also features MERV 13 filtration and an ionization section that helps clean incoming air.



Project Team

- Arris Consulting
- Bora Architects
- Lensa Consulting
- Sora Design Group
- Cherry City Electric

“I think the charrette was one of my favorite incentives from Energy Trust because we don’t always have these sorts of meetings in such a comprehensive way.”

— Katrina Shum Miller of Lensa Consulting

“So, the system is a hybrid of hydronic and low-energy airside systems that we feel is a really good fit for the building,” explained Craig. Additionally, the building utilizes thermal zoning and ceiling fans throughout the open office area, so users have a choice in different stages of cooling and comfort control.

EARLY ENGAGEMENT

One of the most valuable incentives from Energy Trust of Oregon was the early design assistance (EDA) meeting. An EDA meeting during schematic design helps support the project team in establishing energy efficiency goals and EUI targets early in the process. Once goals have been set, the team can clearly identify tangible strategies to meet their goals. The EDA for the

Opportunity Center design team offered insightful discussions and comprehensive details on available incentives and modeling decisions.

“Energy Trust was really helpful,” Shum Miller said, “It made a really big difference to be able to get us on the right track and encourage the owner to think broadly about potential opportunities.” The Opportunity Center received \$135,719 in Energy Trust cash incentives and is expected to save \$21,239 in energy costs each year.

TACKLING EMBODIED CARBON AS A TEAM

All the stakeholders expressed their pride and satisfaction in working as a team. Just one of the many examples

of collaboration is Eric McDaniel, energy modeler for Sora Design Group working with Bora and the contractor to perform a whole-building lifecycle analysis to look at the embodied carbon of the project. This helped the team consider the global warming potential from the project materials and the construction. They were then able to work together with the contractor to select the lowest embodied carbon concrete they could acquire. “It was a very collaborative effort across the board,” said McDaniel, “Not just from a design team perspective, but with public engagement, bringing in more diversity and inclusive thinking into the project.”



Find incentives and support for your new building or major renovation project at www.energytrust.org/newbuildings or call **1.877.467.0930**.

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