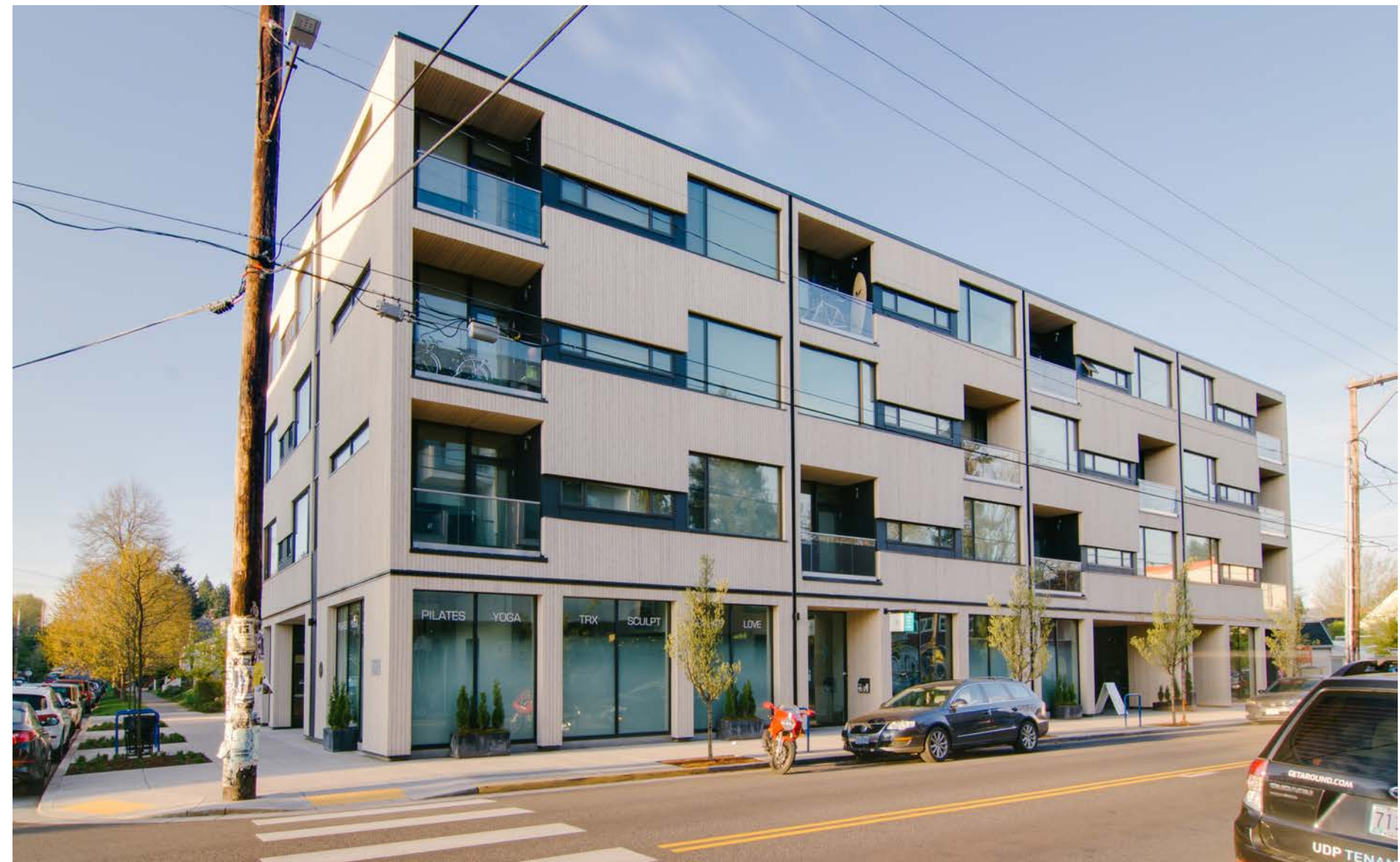
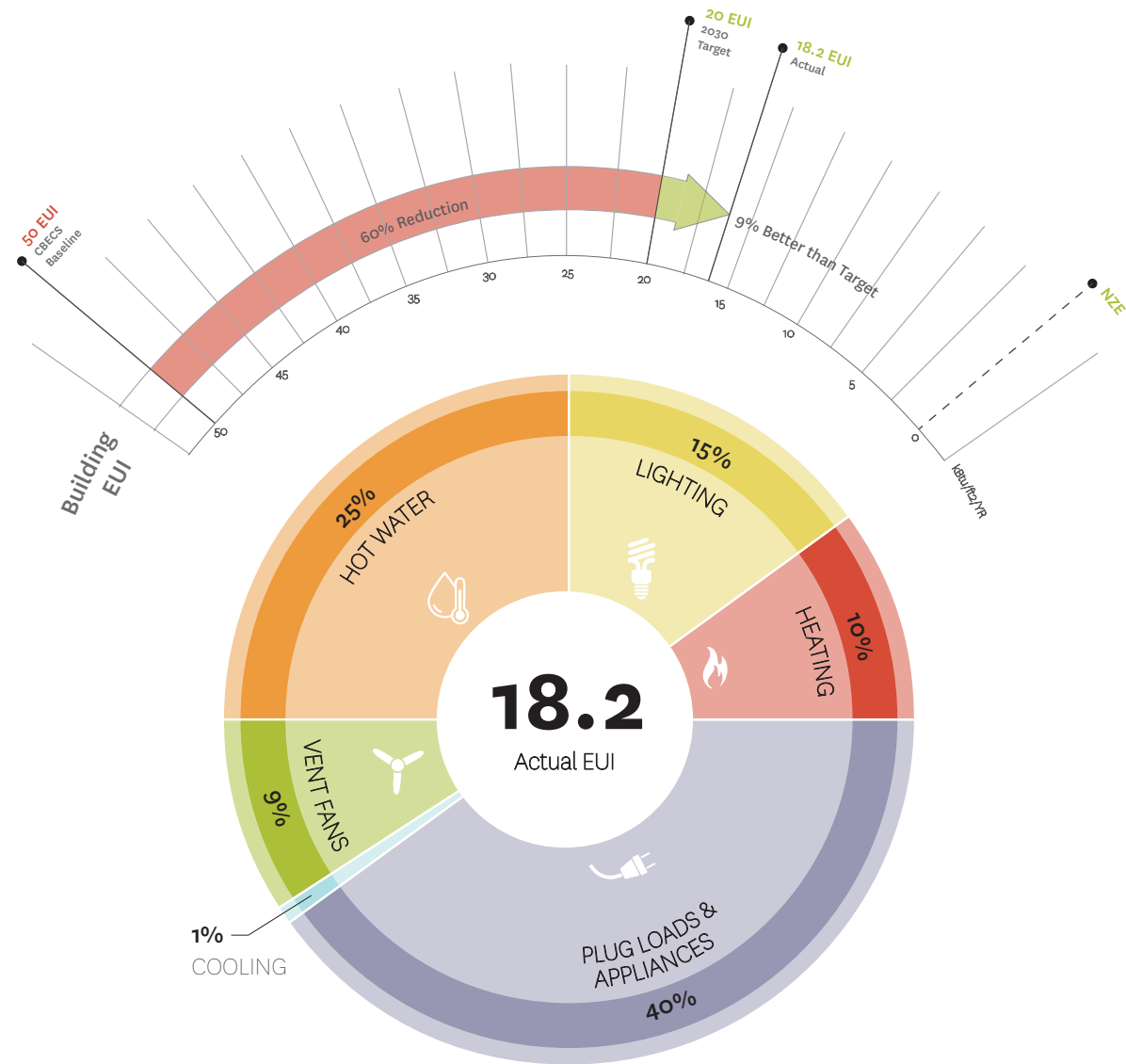


Courtyard Housing
Sustainability Summary

Project Type: Multi-Family Residential
Location: Portland, Oregon
Built Area: 29,662 SF
Scope: New Building, completed 2014
Certification: LEED for Homes (Midrise) Platinum, 2030 Compliant

Architect: Hacker



Design Summary

This 30-unit urban infill apartment complex in close-in southeast Portland features 24 one-bedroom units and six studio units. In an effort to break from the current formula for modern “shotgun” apartments, the design focuses on creating light-filled living spaces in every unit, with large wall-to-wall windows on both the street and interior courtyard-sides.

Key Sustainability Concepts

The site location for this project yielded a 91/100 walkability score, granting the project a LEED Silver benchmark before design had even started. Though sustainability had not initially been a priority for the client, this discovery prompted a shift in their goals for the project, which ultimately achieved LEED Platinum.

This level of sustainability was achieved in three simple, yet creative design moves. First, we carved out the internal core of the building to allow for daylight and fresh air to permeate. This allowed for the introduction of

a lush, vegetated courtyard on the ground floor. Secondly, the corridor was split and wrapped around the courtyard to create exterior hallways, which reduce the demand on electric heating and cooling. The internal courtyard provides daylighting on the interior of each apartment as well as passive cross ventilation. Finally, each unit was rotated to orient the long dimension against the exterior facade, allowing for wall to wall windows resulting in maximum daylighting in each unit. These simple strategies reduce the demand on electrically powered mechanics for heating/cooling and lighting.

Post occupancy energy bills show low electricity usage as the result of the high performance envelope, ductless wall-mounted split units for heating/cooling and Energy Star rated appliances. Although the domestic gas hot water heater is rated 97% efficient, it is the source of hot water for all 30 units and causes the consumption of natural gas to be more than double that of electricity. Post occupancy utility bills conclude that the actual EUI for the building exceeds the 2030 Challenge target. However,

a good lesson learned by the team is the impact gas hot water heaters can have on energy consumption.

Water consumption is reduced with low flow plumbing fixtures throughout and the selection of native, low irrigation plants in the courtyard. This helps reduce the demand on landscape irrigation by 60 percent. Furthermore, all runoff water is treated onsite in vegetated bioswales that are integrated into the courtyard landscaping.

To achieve maximum material efficiency, Hacker specified pre-engineered sizes and pre-cut lengths for the wall framing (which aided in a reduction of construction waste by 90%). The team also eliminated floor joists by using concrete filled metal decking that spans between the load-bearing walls. Locally sourced, reclaimed lodgepole pine from Eastern Oregon clads the exterior along with FSC Certified fir windows.