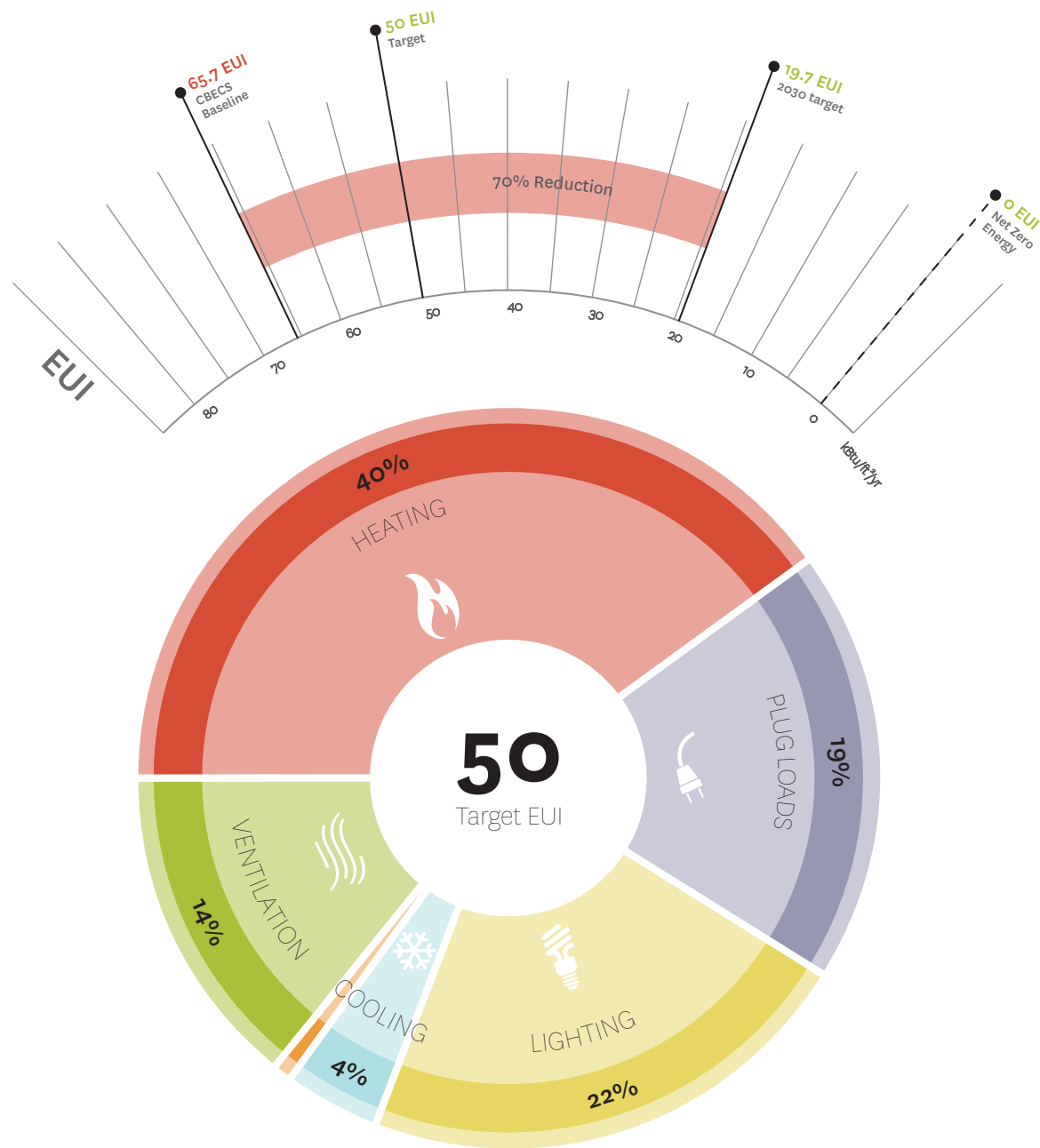


Cultural Crossing at Portland Japanese Garden
Sustainability Summary

Project Type: Cultural
Location: Portland, Oregon
Built Area: 14,675 SF
Scope: New Building, completed 2017
Certification: LEED Gold

Architect: Hacker with Kengo Kuma & Associates
Energy Consultant: PAE
Sustainability Consultant: Green Building Services



Design Summary

The Portland Japanese Garden’s Cultural Crossing Expansion seeks to create a serene, pilgrimage-like journey from the city to the forest, drawing each visitor into a fully immersive experience of the traditional arts and culture of Japan. Working with the Garden’s master garden craftsmen, the project designers envisioned a place of interconnected indoor and outdoor spaces that pay homage to the spirit of nature and allow for quiet contemplation – resulting in four modest, human-scaled new buildings designed to merge into the dramatic slopes of the Washington Park terrain, in combination with the tall vertical lines of Pacific Northwest conifers.

Key Sustainability Concepts

The project is designed to optimize sustainable strategies in order to improve the buildings’ social and environmental impact. Early energy modeling and analysis helped inform sustainable design decisions. The final modeled EUI of 50 demonstrates an improved building performance that is 39.5% better than the baseline EUI of 65.7. Post-occupancy data will be collected to verify the model.

Several sustainable strategies have been incorporated into the design: a comprehensive thermal comfort system

includes a ground source heat pump using geo-thermal wells bored 300 feet deep into the earth. The geothermal wells, radiant flooring, and heat recovery ventilation system are highly efficient, significantly reducing the amount of energy needed to heat, cool, and ventilate the buildings. Combined, these systems diminish the need to burn fossil fuels on-site, eliminate the need for large noisy mechanical units, decrease the size and quantity of bulky air-handling ductwork, and, ultimately, reduce operational costs.

Likewise, passive strategies have improved the overall quality and performance of the buildings. Ample daylight in all occupied spaces is a result of the openness of the design. Floor-to-ceiling, wall-to-wall windows reduce the demand for electric lighting while providing an even and soft quality of interior light, moderated by deep roof overhangs. 100% thermally-broken frames and overhangs that shade the expanses of glass help to regulate internal temperatures passively.

Large sliding doors on the outside corners of the buildings interpret traditional Japanese vernacular architecture and help open the buildings to courtyard breezes. This strategy, in tandem with the deep eaves, allows the buildings to be less reliant on mechanical

cooling during the hot summer months. All occupied spaces have access to operable windows, so passive ventilation is utilized wherever possible.

Social sustainability was equally important as environmental responsibility to this client. Designing for universal access was a major driver of how thresholds and vertical access were detailed. The Cultural Crossing prioritizes the mobility and access of all visitors, and regular shuttle service transfers patrons up and down the steep hillside from the parking lot to the courtyard. To achieve a common ground floor elevation for all three courtyard buildings, a significant amount of excavation into the hillsides and associated retaining walls and structural cantilevering was required.

Particular attention to detail was given to the exterior thresholds of the buildings at the courtyard level in order to ensure a continuous, level ground-plane. Consequently, the expansive flatness of the courtyard flows into the enclosed spaces, simultaneously blurring the line between the open and the enclosed while providing a seamless experience for all visitors.