

Cedarwood Net Zero

Affordability & Constructability:

Even though this fourplex focuses on sustainability, it doesn't mean higher costs for future homeowners. In order to increase affordability, the building uses space efficiently with a compact design and minimal undulations in the exterior shell. The floorplans are also stacked and mirrored to reduce framing, plumbing, and electrical costs. We chose the 50'x100' lot because it's one of the most abundant lot sizes in Bellingham and in theory, one of the less expensive lots, thereby reducing the overall project cost which can be passed on to the future homeowners. Also, by increasing the number of units on the lot without making it feel crowded, we can balance the affordability per unit and the actual livability. Of course, long-term affordability for residents is also important, which is why the construction is highly energy and water efficient, with the addition of solar panels. The combination means the residents won't have to pay as much for their water/sewer bills and will only have to pay PSE's \$7 connection fee for electricity. The air-tight and highly insulated envelope also means they will hold up better over time, reducing the long-term maintenance costs.

The unit design is based on a real, built ADU that has performed well and been well loved by its many tenants.

Sustainability & Resilience:

As the name suggests, this complex is net zero, meaning it produces all the energy that it uses. The means to get there is not just by adding solar on the roof, but by creating an air-tight, energy efficient envelope with energy efficient finishes. To create the air-tight, highly insulated envelope, the complex would use Structural Insulated Panel (SIP) walls and roof, aerobarrier air sealant to fill any leaking points, Insulated Concrete Form (ICF) foundation walls for extra insulation, and triple pane windows to reduce thermal bridging. Each unit would also get outfitted with energy efficient appliances and a mini-split heatpump for heating and cooling. The complex would achieve Energy Star, Indoor AirPlus, and DOE Certified Efficient New Home certifications.

The use of SIPs as well as the compact design with minimal undulations reduces the materials needed and the material waste during construction. Locally milled cedar which sequesters carbon, would be used to side the first floor and build some of the exterior decks. Hardie lap siding, which is fire resistant and highly durable, would be used on the second floor.

Innovation & Creativity:

The standard single-family house and multi-unit complexes being built are built to code-minimums and don't bother with sustainability at all, or they green-wash by only adding solar and maybe an energy efficient heatpump. This Cedarwood complex pushes that standard to provide an option for truly sustainable housing in a form that's accessible to more people. This four-plex doesn't cut corners to increase profitability. While the overall look of the complex may not be very innovative, the bones of it are. **Pairing the technologies and practices listed above allows this four-plex to far exceed the performance, durability, resilience, comfortability and livability of the standard unit on the market today.**