



**Results from a Net-zero Feasibility Study
for Warm Springs Community Center**
High Performance Design Training
May 8, 2018

About us

Independent nonprofit organization dedicated to helping utility customers invest in and benefit from energy efficiency and clean, renewable power.

We provide:

- Information
- Technical services
- Engineering studies
- Cash incentives
- Contractor connections

A clean energy power plant

607 average megawatts saved

121 aMW generated

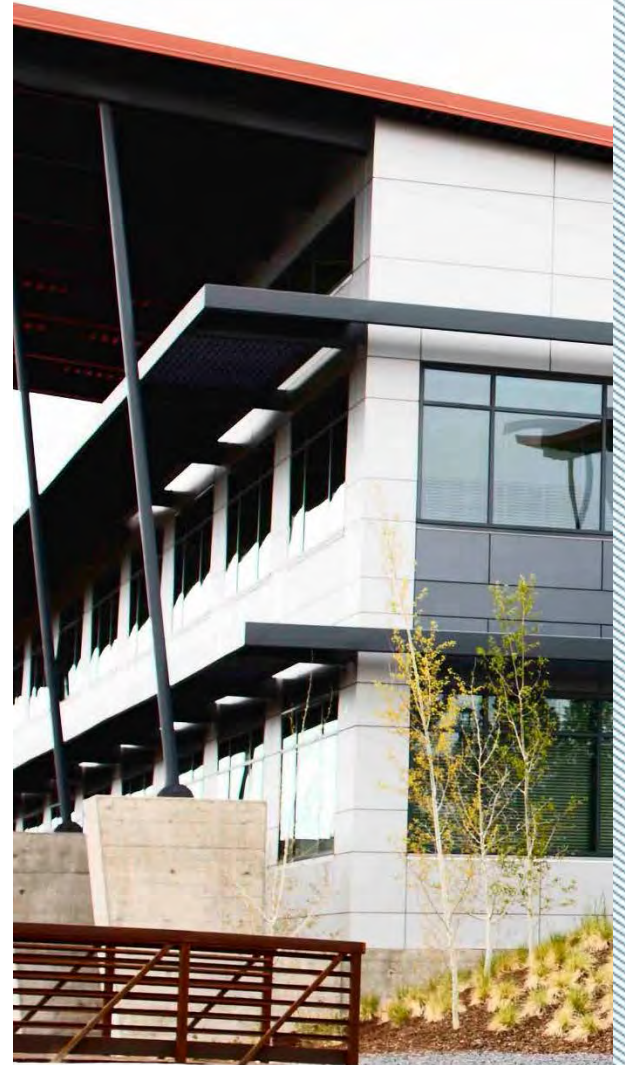
52 million annual therms saved

Enough energy to power **564,000** homes
and heat **100,000** homes for a year

Avoided **20** million tons of carbon dioxide

Energy Trust New Buildings

- New construction
- Major renovation
- Tenant build-out
- Additions or expansions



Training and education opportunities



- Allies for Efficiency
- Building Energy Simulation Forum
- High Performance Design Trainings
- Special events
- Event partnerships and sponsorships

FREE trainings for industry audiences statewide.
Webinar options and continuing education credits
often available.

energytrust.org/commercial/commercial-training-events/

Building Energy Simulation Forum upcoming trainings

June 20, 2018

Net Zero Fellowship 2017 Results



Upcoming sponsored trainings

May 23, 2018 - Newberg, OR

AEE: Chehalem Parks & Recreation

Aquatic Center Building Tour





Commercial Training And Events

Boost your knowledge with Energy Trust's continuing education opportunities and special training events. Trainings include real-world examples, case studies, and detailed technical information presented by experts from the fields of architecture, engineering, construction and development, as well as specialists in a variety of building types and market sectors. Attendees may be eligible for continuing education units, CEUs.

[Find Upcoming Trainings and Events](#)

energytrust.org/commercial/commercial-training-events

2018 Net Zero Fellowship

- Up to two fellowship grants, not to exceed a combined total of \$50,000, to support net-zero energy research over 12 to 18 months
- Funding for new research to advance design best practices, technologies and policies, and the overall net-zero community in Oregon
- Application deadline May 31, 2018
- Learn more at energytrust.org/zero



Questions?

For more information about:

- Upcoming trainings
- Education opportunities
- Becoming an Energy Trust New Buildings Ally

Contact kirsten.vogel@clearesult.com



Thank you

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(503) 467-0892

Warm Springs Commissary Renovation Case Study

May 8, 2018



WALKER | MACY
HACKER



Contents

Introduction to WSCAT and Commissary

Major Stakeholders

Community Design Process

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Project Team

Architect

Hacker

733 SW Oak Street
Portland, OR 97205

Landscape Architect

Walker Macy

111 SW Oak Street, Suite 200
Portland, OR 97204

Cost Estimator

DCW Cost Management

220 NW 8th Avenue
Portland, OR 97209

Mechanical and Electrical Engineers

PAE

522 SW 5th Ave #1500,
Portland, OR 97204

Structural Engineers

KPFF

111 SW Fifth Avenue, Suite 2500
Portland, OR 97204



Warm Springs Community Action Team



The Warm Springs Community Action Team (WSCAT) is a non-profit community development organization located on the Warm Springs Indian Reservation.

WSCAT's mission is to promote community development in Warm Springs by empowering individuals and groups of people to realize their potential, become self-reliant, and effect positive change for themselves, their families, and their community.

Programs:

- Individual Development Program (IDA)
- Financial Empowerment
- Entrepreneurship
- Home ownership
- Tax Preparation
- Friday Outdoor Market

Chris Watson, Executive Director

Project Vision

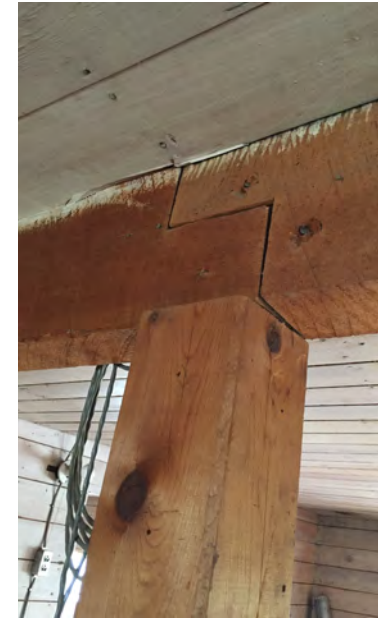
The scope of this project is to re-purpose an existing building to be a new, Net Zero Energy building. Self-reliance and sustainability are major goals for the Warm Springs community. However, these goals are difficult to achieve with many reservation projects due to lack of funding. The approach of this project is to provide a small step that can be easily implemented, is repeatable, and can serve as an example for future projects.

This project includes studying the feasibility of renovating and relocating an existing historic building in the downtown area of Warm Springs, Oregon. The existing building, the Old Commissary, will be placed on a new foundation, and remodeled.

The primary program of the renovated Commissary will be a small business incubator, which will occupy the second floor of the building. The incubator will provide services and work space to help jumpstart small businesses within the community. The first floor of the building will provide other amenities for the community, and site improvements will focus on connecting the building to an outdoor seating and food truck area.



The Commissary Building



Major Stakeholders



HACKER

WALKER | MACY



Community Design Process

Community Design Process - Open House Presentation

History to Date

1890s Commissary Built



2005 ODOT Local Street Network & Campus Area Plan

2005 Warm Springs Downtown Development Plan



2012 Town Center Property Summary



2016 BIA transfers ownership to CTWSO

Summer 2016 Community Open House

Winter 2016 Tribal Council Meeting

Tentative Construction Completion end of year 2018

(Predicted 9 month construction period)

Community Feedback

A community workshop was held on May 8, 2012 as part of the Town Center Property Summary. The following themes from this study could potentially be fulfilled at the the Commissary Building.

- amphitheater
- artist's coop
- barber
- buildings that tell a story
- business opportunities
- coffee and newspaper
- community-focused
- connection to nature
- dancing
- eco-friendly structures
- farmer's market
- fountains
- fresh produce
- interesting and fun
- like the old campus
- live music
- local crafts
- local food
- maintain existing green space
- mature trees and shade
- open air market
- serves locals and visitors
- tribal history
- street lighting
- understated simplicity

Did we miss something? Let us know here...

Community Design Process - Open House Presentation

What is a Small Business Incubator?



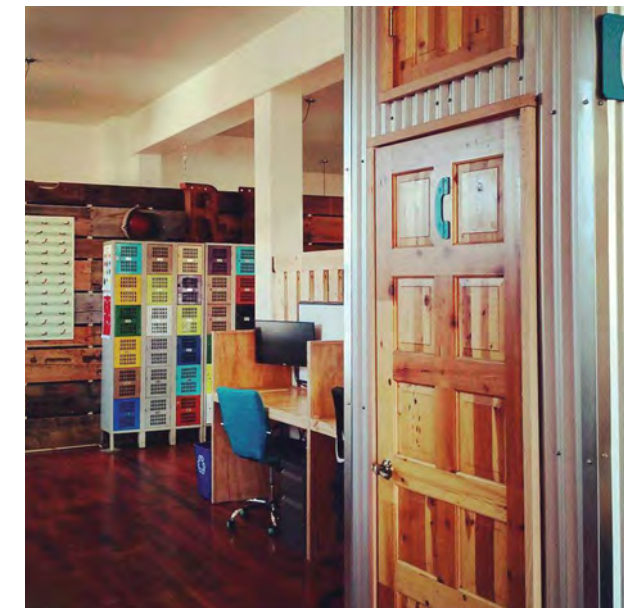
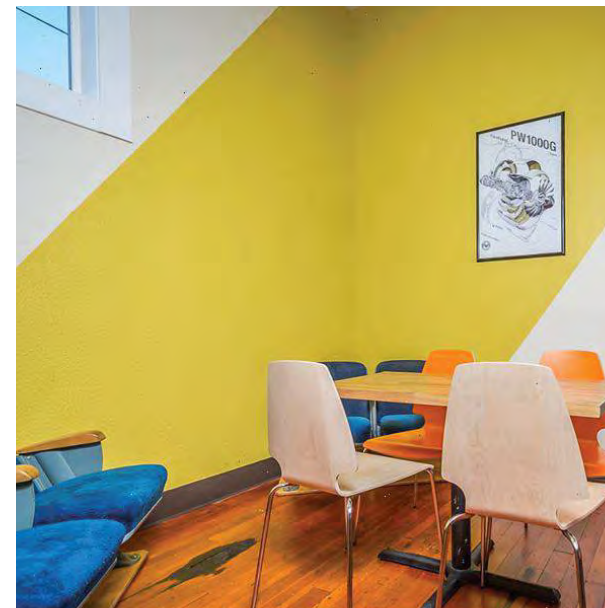
Gauchos Collective

- Coworking Space in Klamath Falls
- Common work areas: laptop bars + community table
- Available Kitchenette
- Printer - Copier - Scanner
- Meeting room with projector
- Lockers for rent
- Secure building access
- WiFi included
- Open style desks
- Dedicated desks with storage
- Dedicated desks with filing cabinet
- Bookable conference room



Other Nearby Coworking Spaces

- SistersTECH
178 S Elm St, Sisters
- High Desert Maker Mill
213 SW Columbia St, Bend
- The Wilds
30 SW Century Drive #120, Bend
- SCORE Business Incubator
922 NW Circle Blvd, #160 Corvallis
- BendTECH Coworking
1001 S Emkay Drive, Bend
- WeWork Portland
220 NW 8th Ave, Portland



Community Design Process - Open House Presentation



ART STUDIO



MAKER SHOP



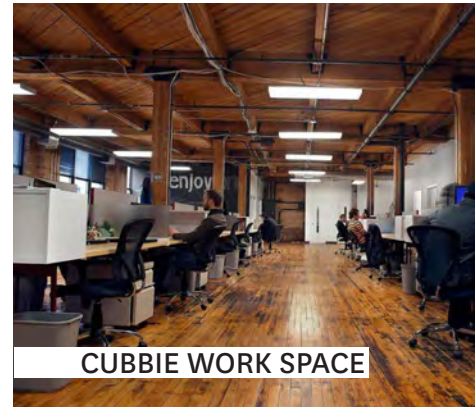
MAKER RETAIL SPACE



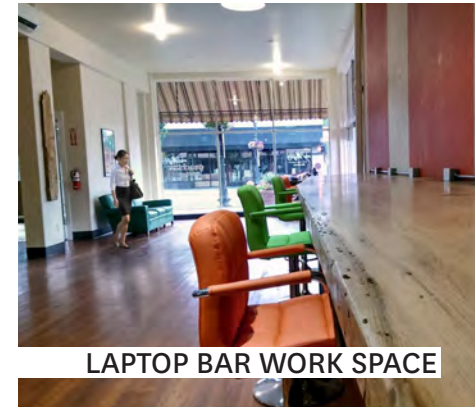
RETAIL SPACE



INDIVIDUAL WORK SPACE



CUBBIE WORK SPACE



LAPTOP BAR WORK SPACE



MEETING SPACE



CAFE WORKING SPACE



CAFE READING SPACE



CAFE GALLERY SPACE



STREETSIDE CAFE



COURTYARD CAFE



INDOOR-OUTDOOR CAFE



MIXED OUTDOOR SEATING



ATTACHED GREENHOUSE

Building Inspiration Images

Community Design Process - Open House Presentation



SCULPTURAL SIGN



PUBLIC MURAL



PUBLIC MUSIC



FIRE CIRCLE



FIRE PIT SEATING



SHADED SEATING



FOOD TRUCK PAVILION



FOOD TRUCKS IN THE PARK



OUTDOOR FESTIVAL SPACE



FARMER'S MARKET
ON A STREET



FARMER'S MARKET
IN THE PARK



OUTDOOR STAGE



PUBLIC PLAY SPACE



EDUCATION GARDEN



SOLAR POWER



IRRIGATION CISTERN

Site Inspiration Images

Community Design Process - Open House Presentation

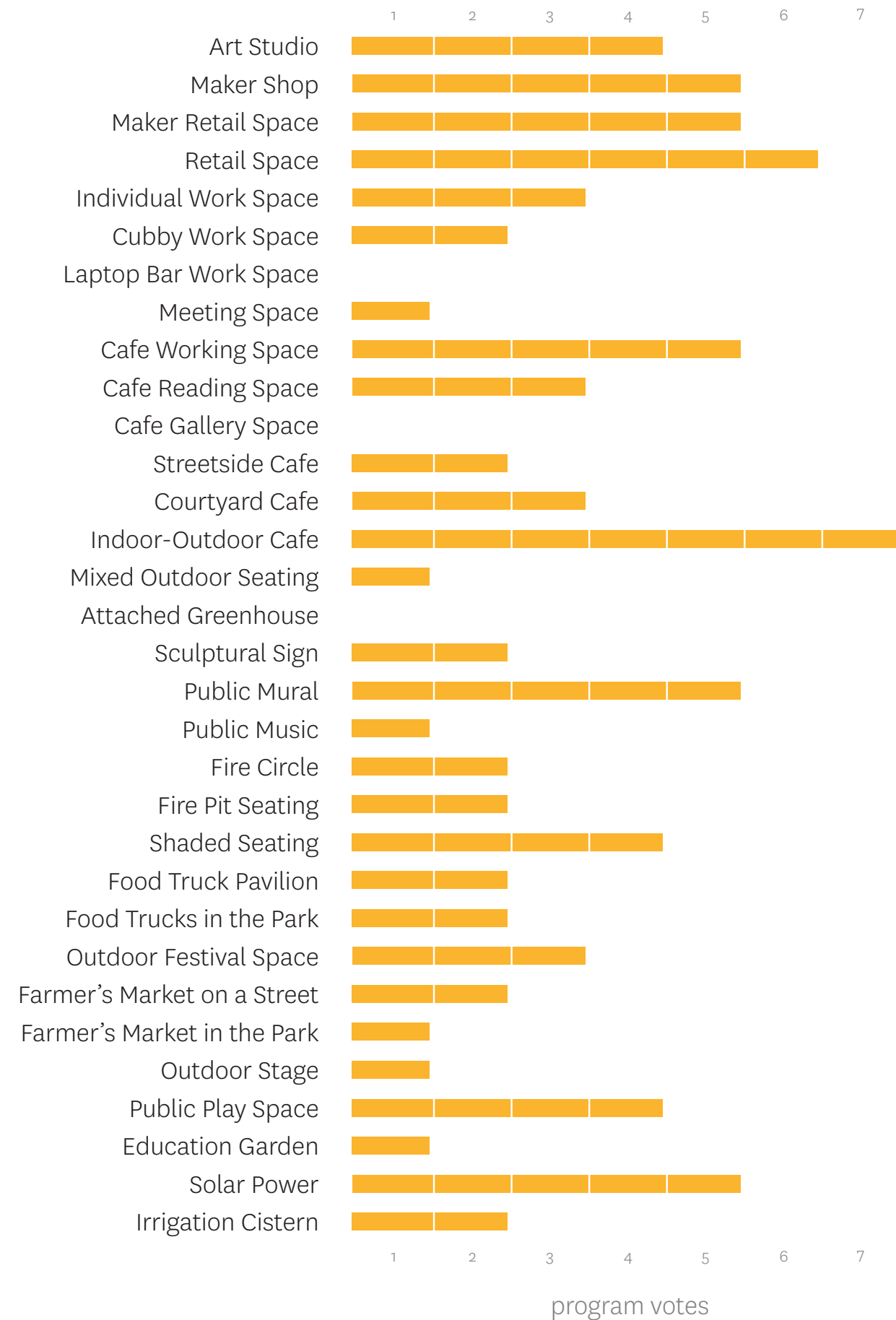
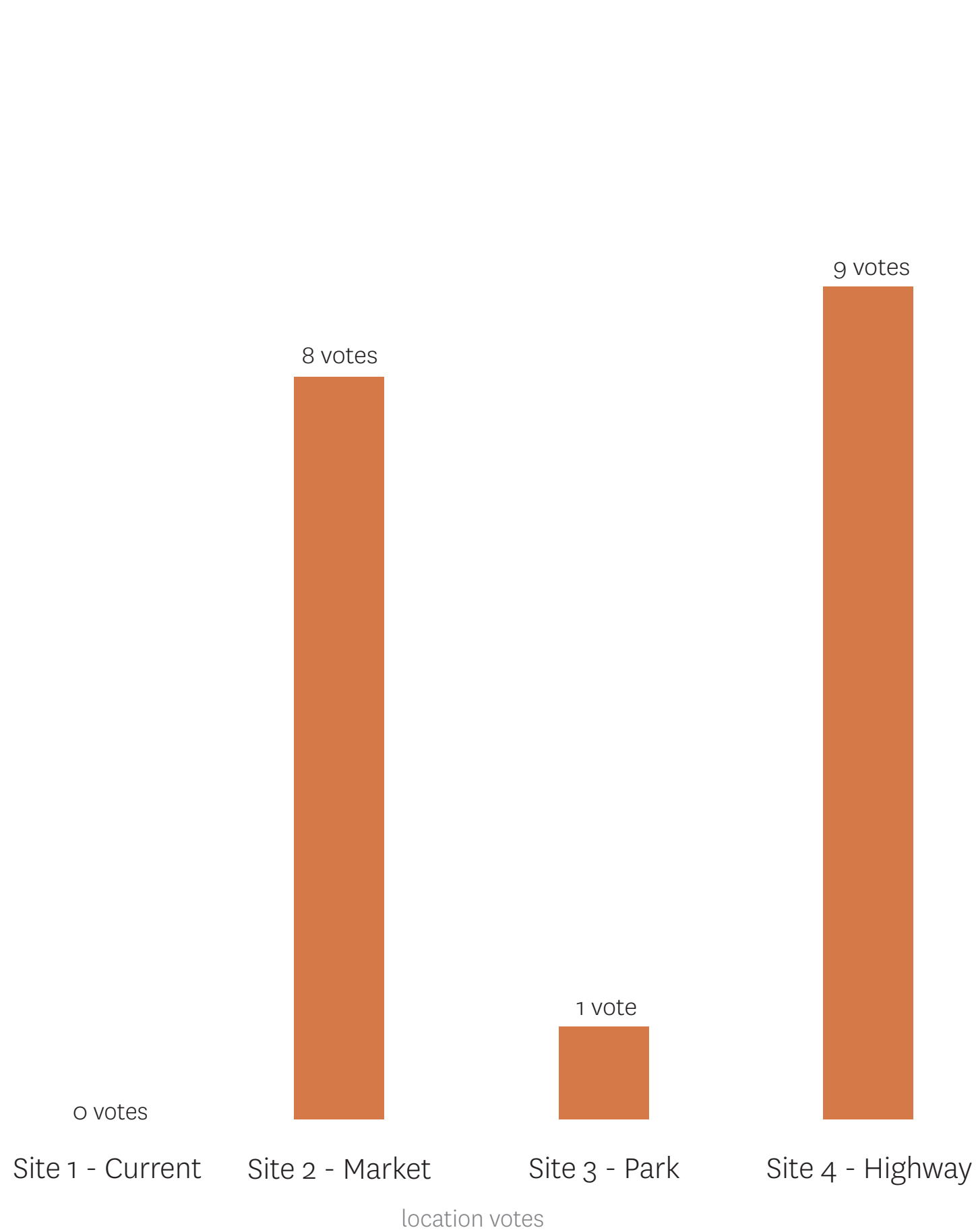


Community Design Process - Feedback

Community Engagement / September 2016



Community Design Process - Feedback

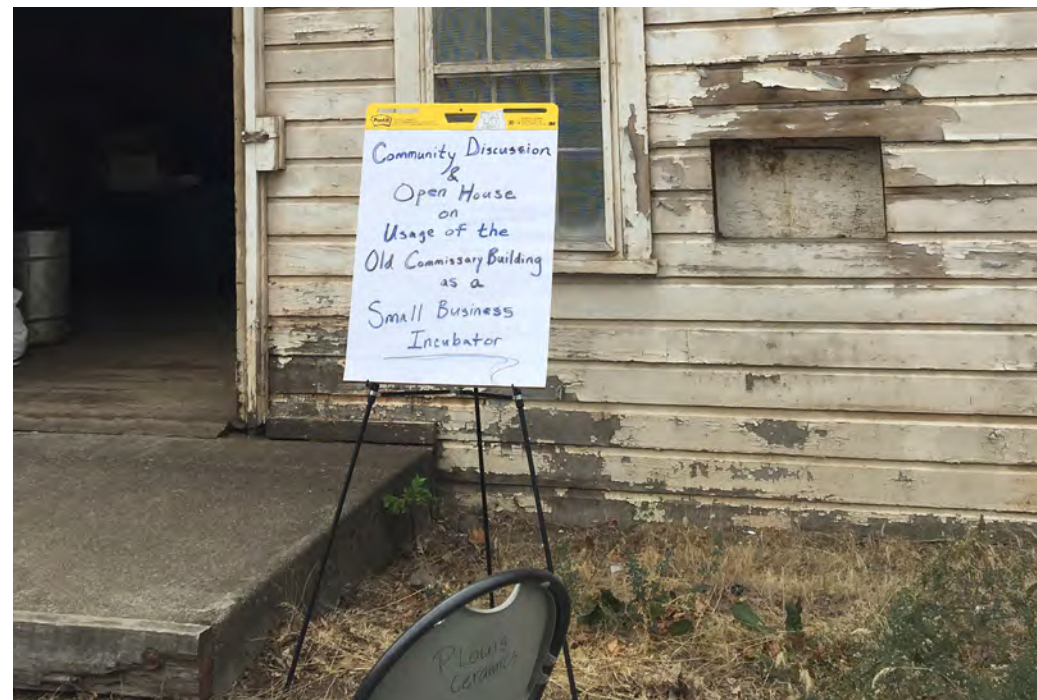


Project Goals

- Communal hub
- Landmark
- Economic generator
- Flexible and adaptive design
- Self-reliant
- Sustainability

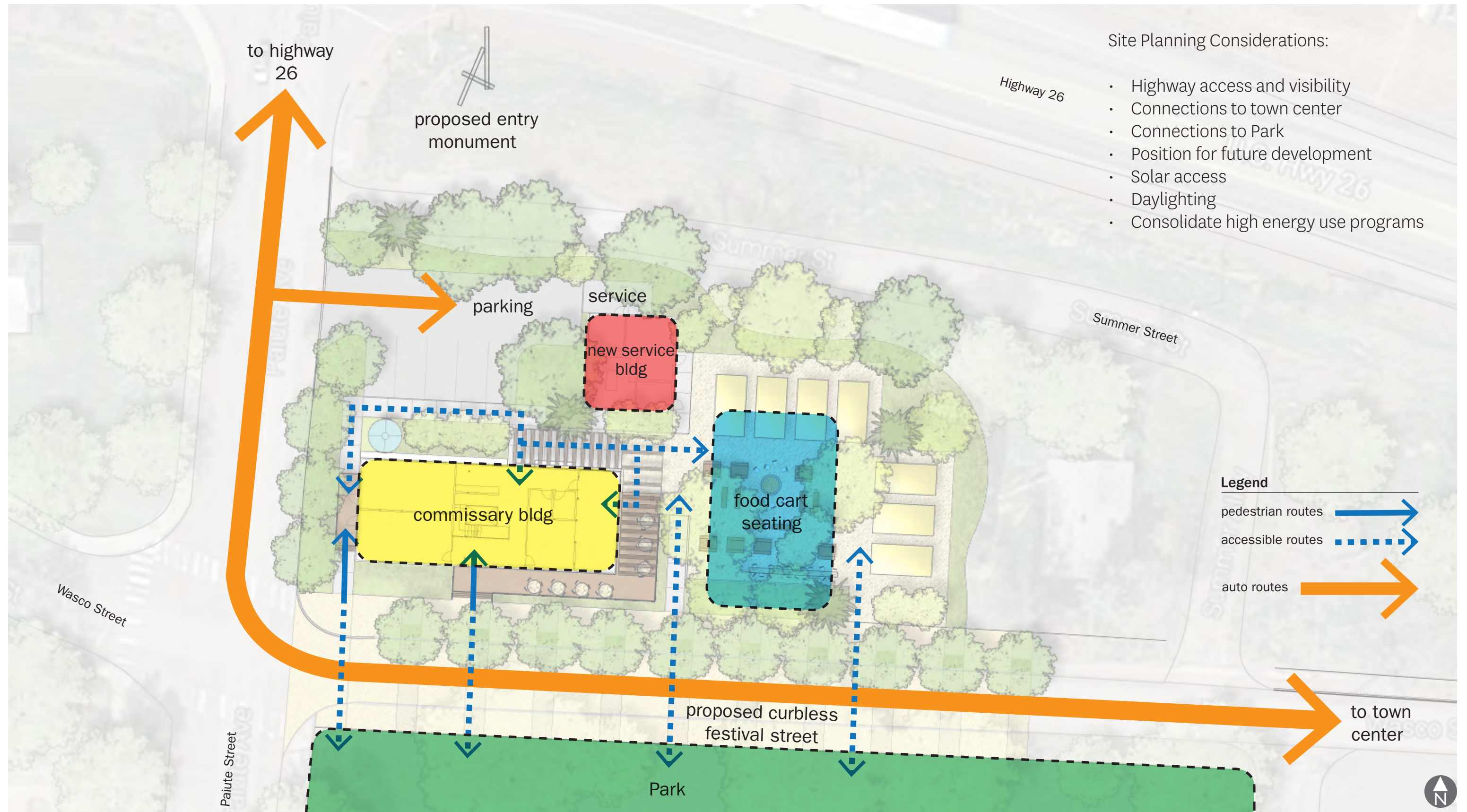
Building Program

- Maker space
- Retail - barber shop, vendor
- Indoor-outdoor cafe
- Community kitchen
- Open office space
- Meeting spaces
- Food Carts and shaded seating area



Design Documentation

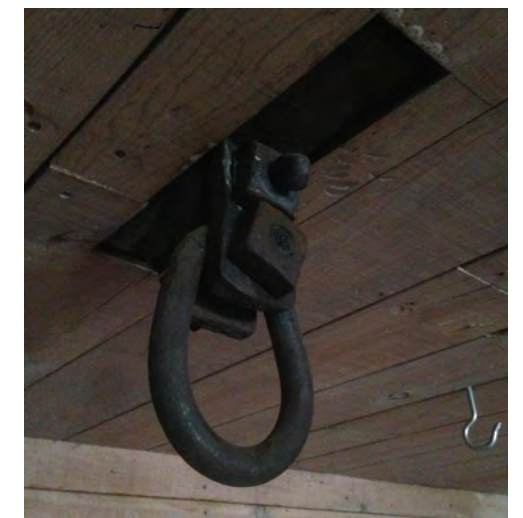
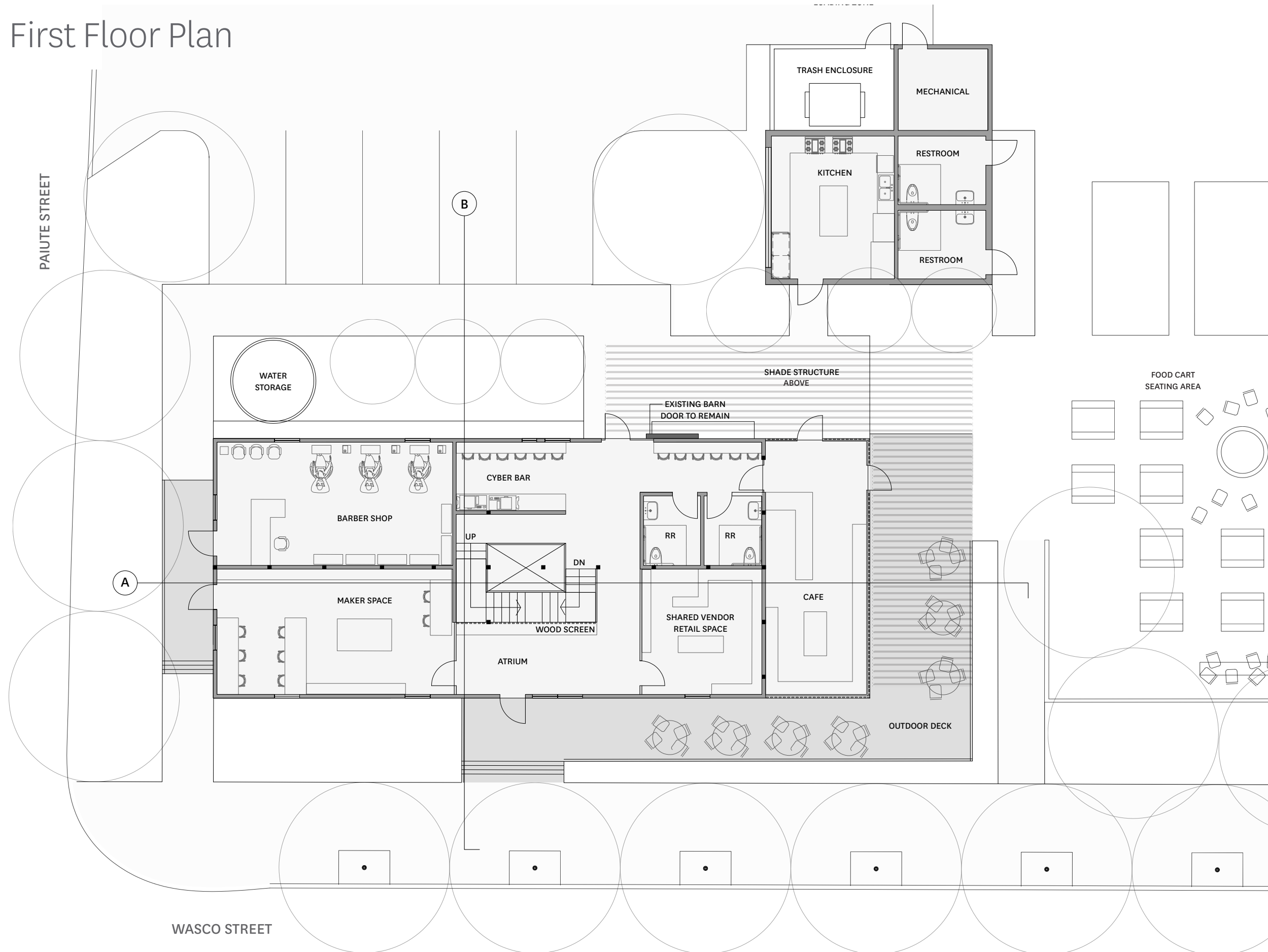
Site Diagram



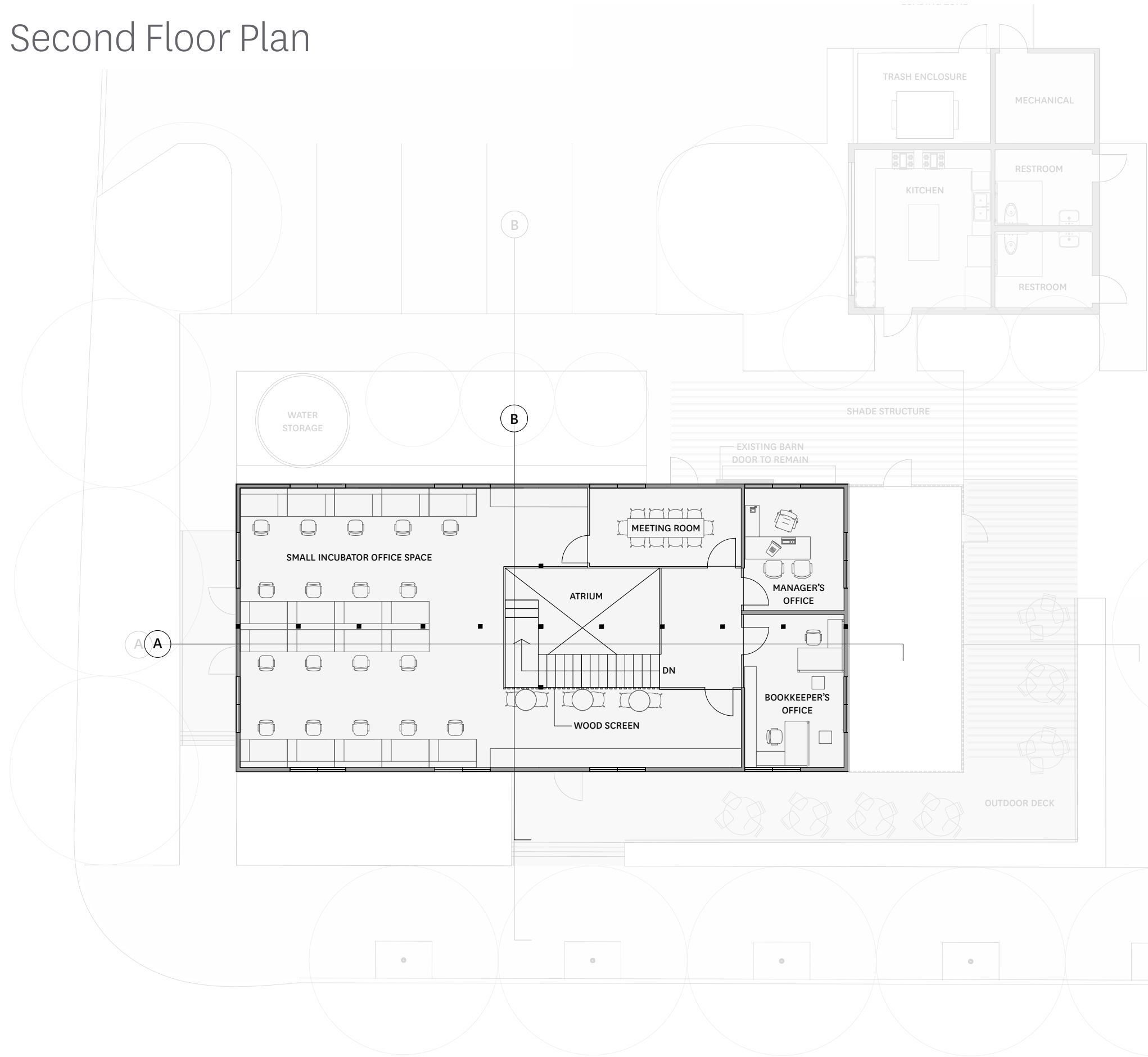
Site Plan



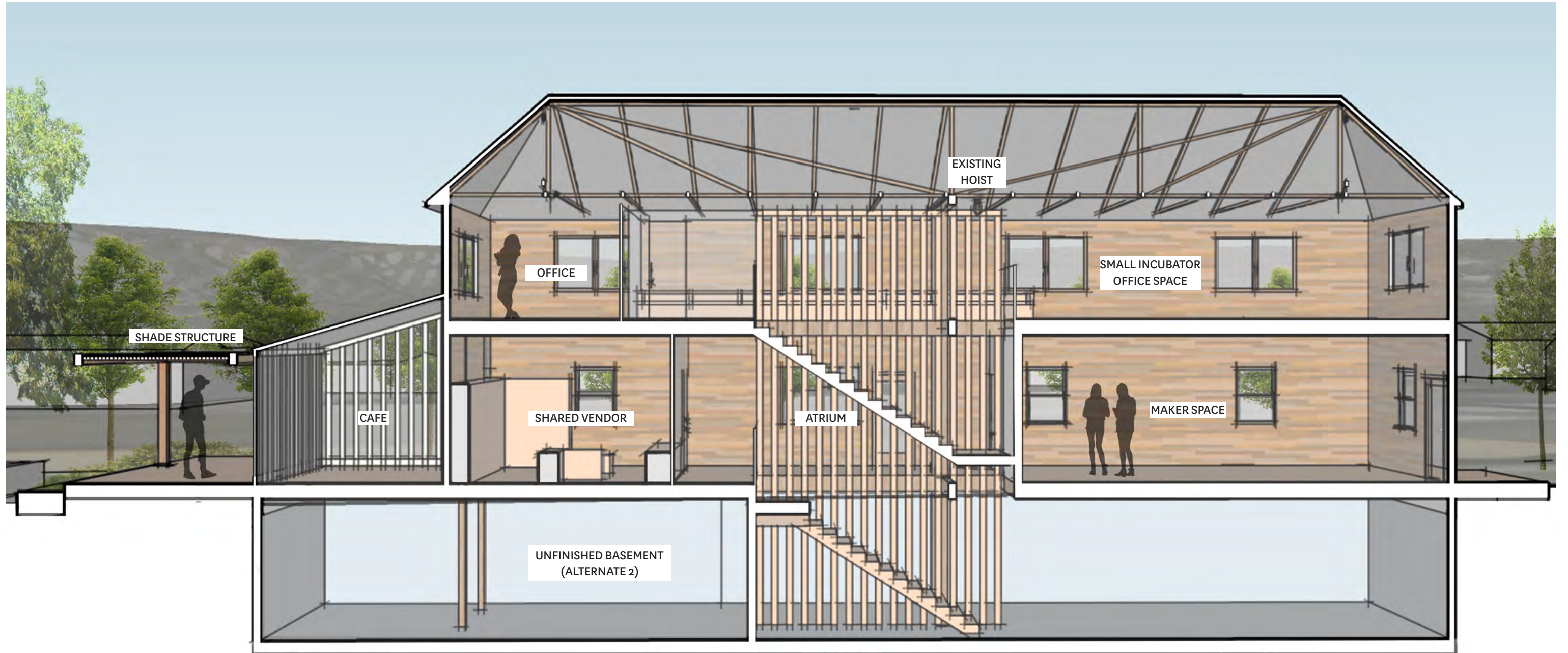
First Floor Plan



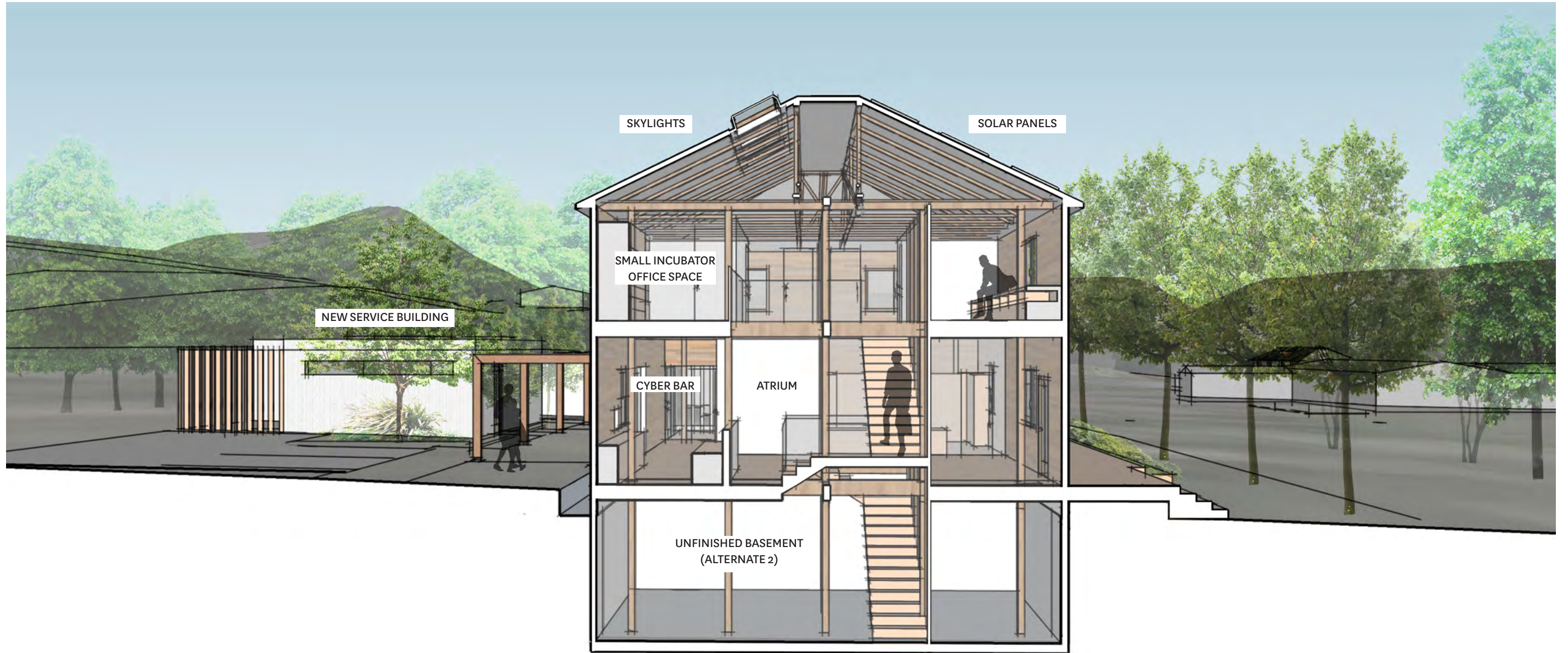
Second Floor Plan



Section A



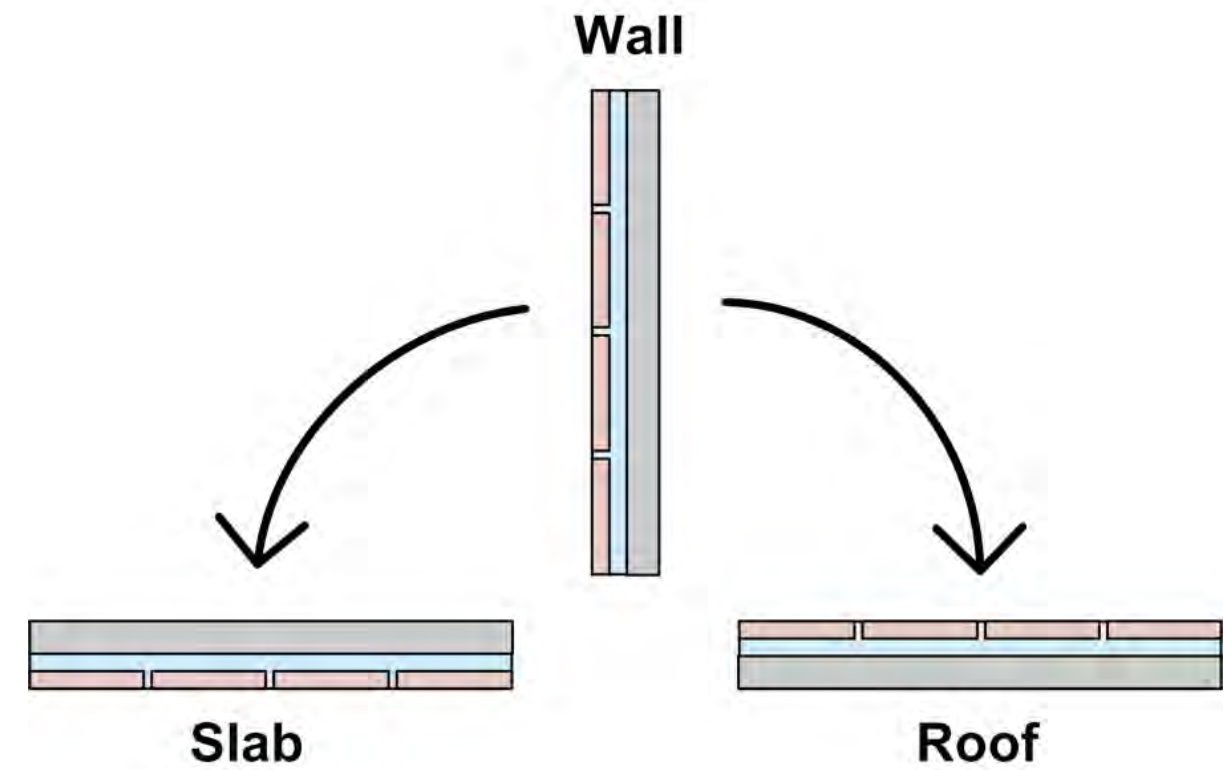
Section B



High Performance Envelope Goals

Retrofitting a 19th century envelope for Net Zero Energy

- Energy modeling
- Durability
- Air tight assembly
- Detail transitions to control air infiltration
- Continuous exterior insulation
- Minimize thermal bridging
- Improve window performance
- Balance performance and economy



The Perfect Wall, Joseph Lstiburek

Exterior of structure:

- Rainwater control layer
- Air control layer
- Vapor control layer
- Thermal control layer

High Performance Envelope

Wall Assembly

R-19 + R-15_{ci}

Walls Below Grade

R-10_{ci}

Roof Assembly

R-50_{ci}

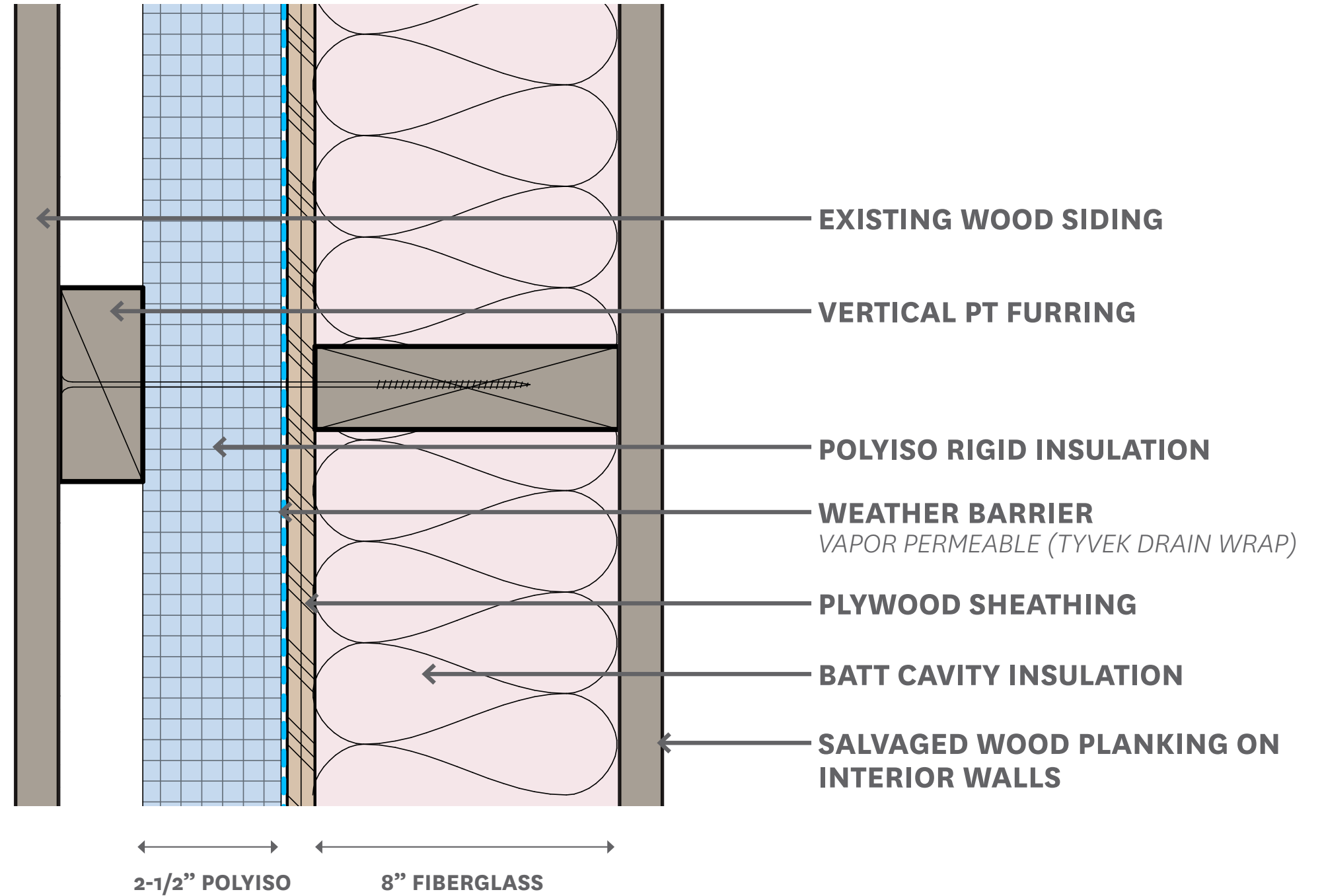
Window U-Factor

U- 0.27

Air Infiltration

0.15 cfm/sf

Plan



High Performance Envelope

Wall Assembly

R-19 + R-15_{ci}

Walls Below Grade

R-10_{ci}

Roof Assembly

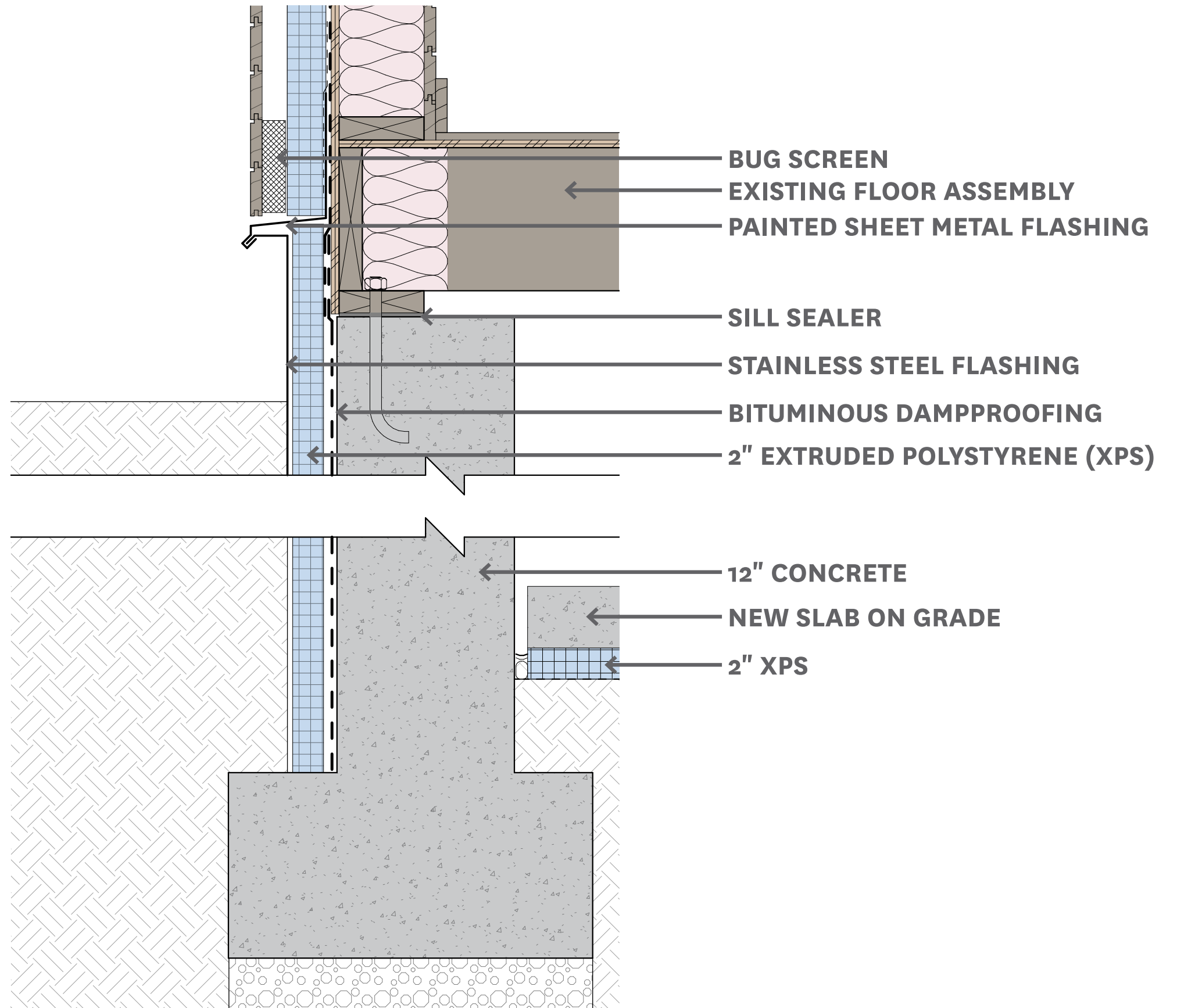
R-50_{ci}

Window U-Factor

U- 0.27

Air Infiltration

0.15 cfm/sf



High Performance Envelope

Wall Assembly

R-19 + R-15_{ci}

Walls Below Grade

R-10_{ci}

Roof Assembly

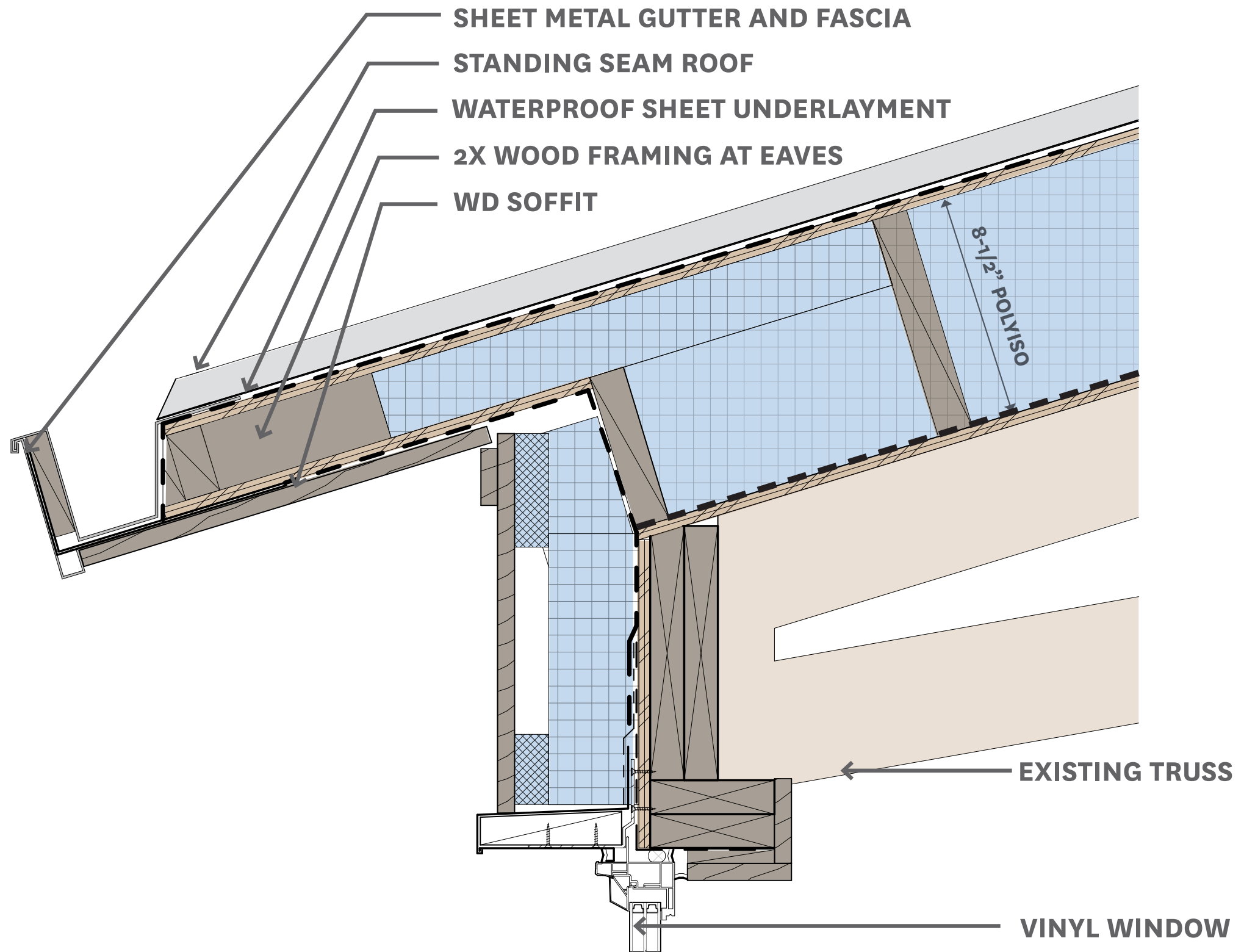
R-50_{ci}

Window U-Factor

U- 0.27

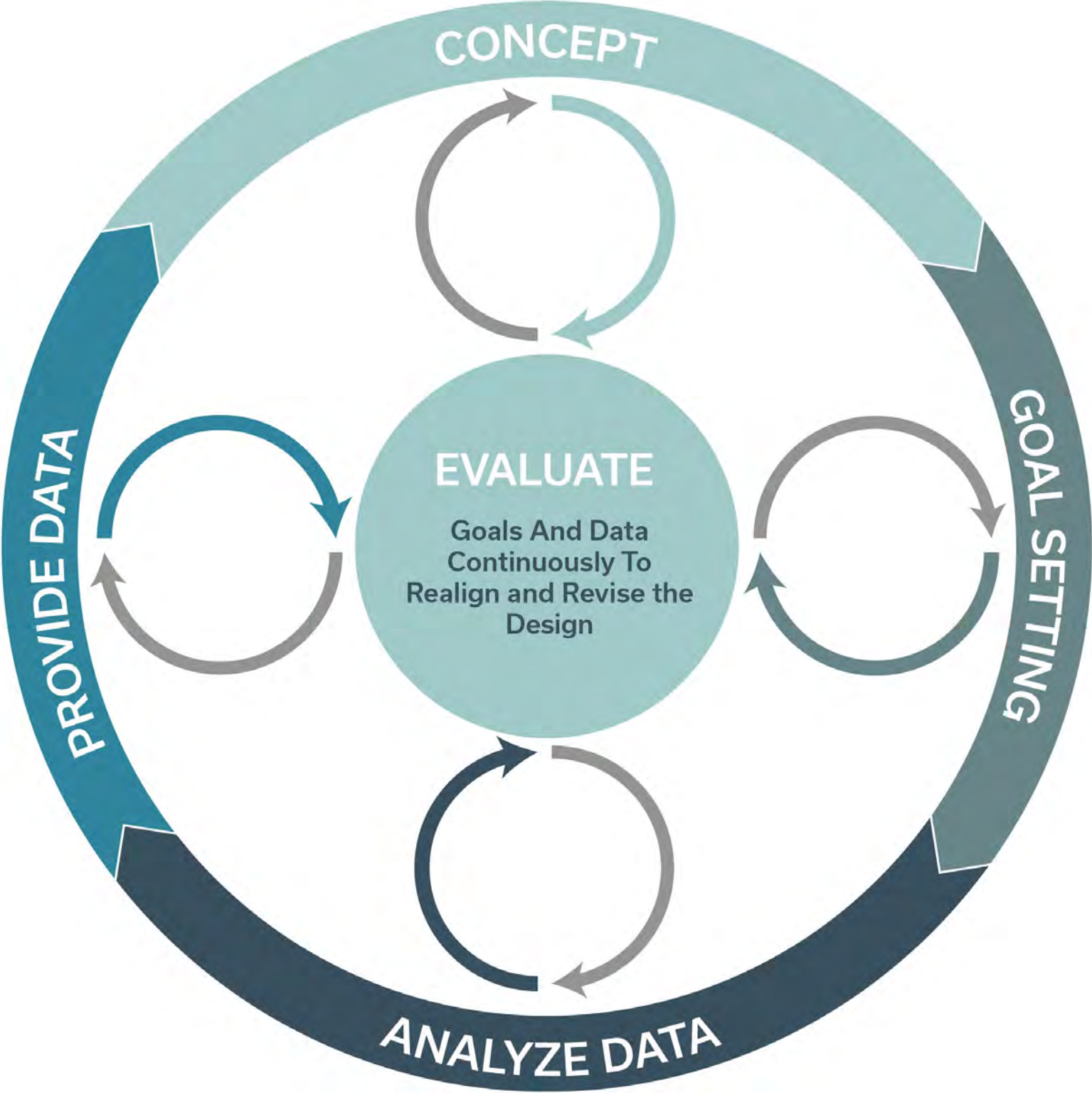
Air Infiltration

0.15 cfm/sf

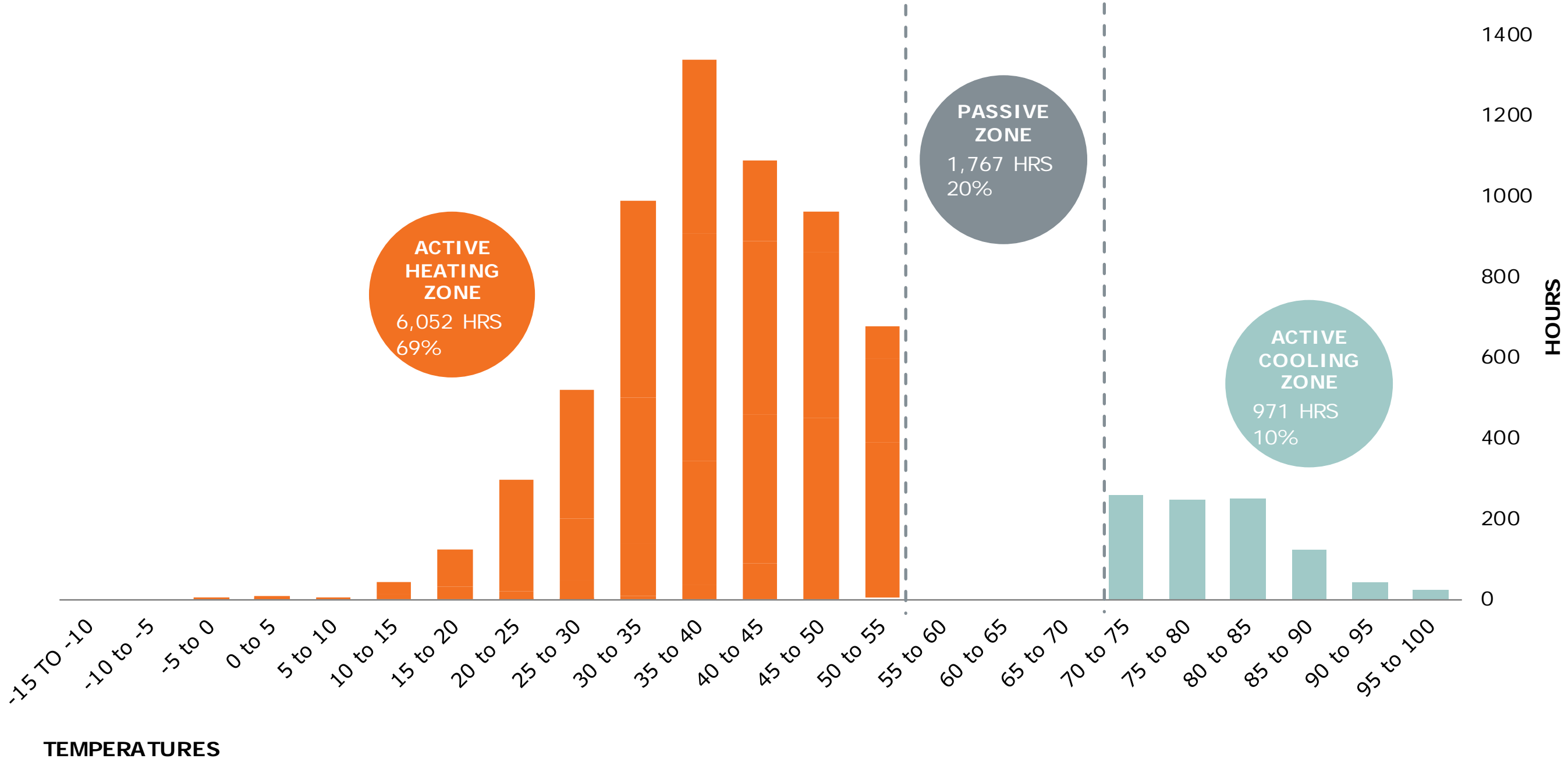


Getting to Net Zero

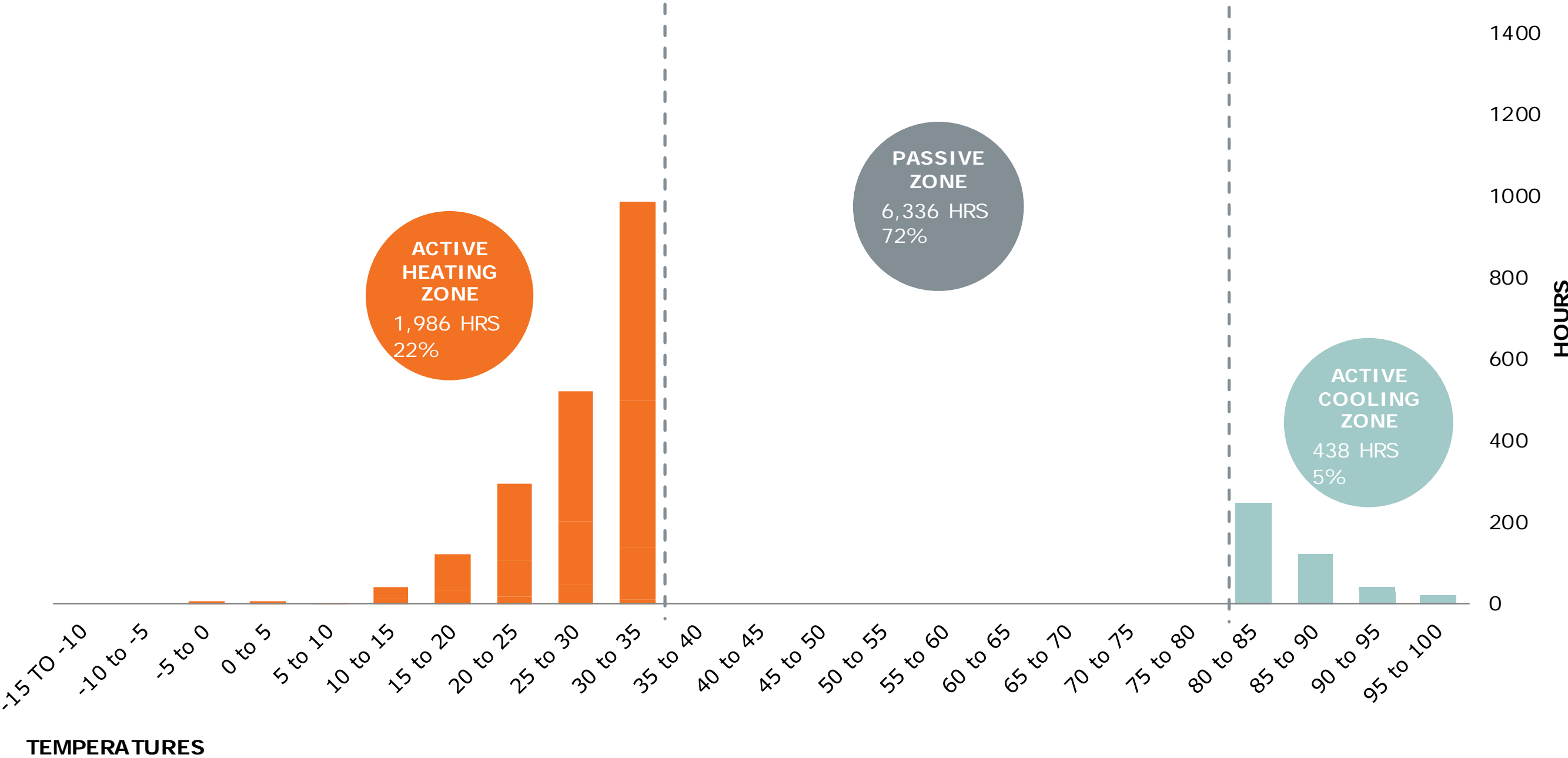
The Cycle of EUI Goal Setting and Design



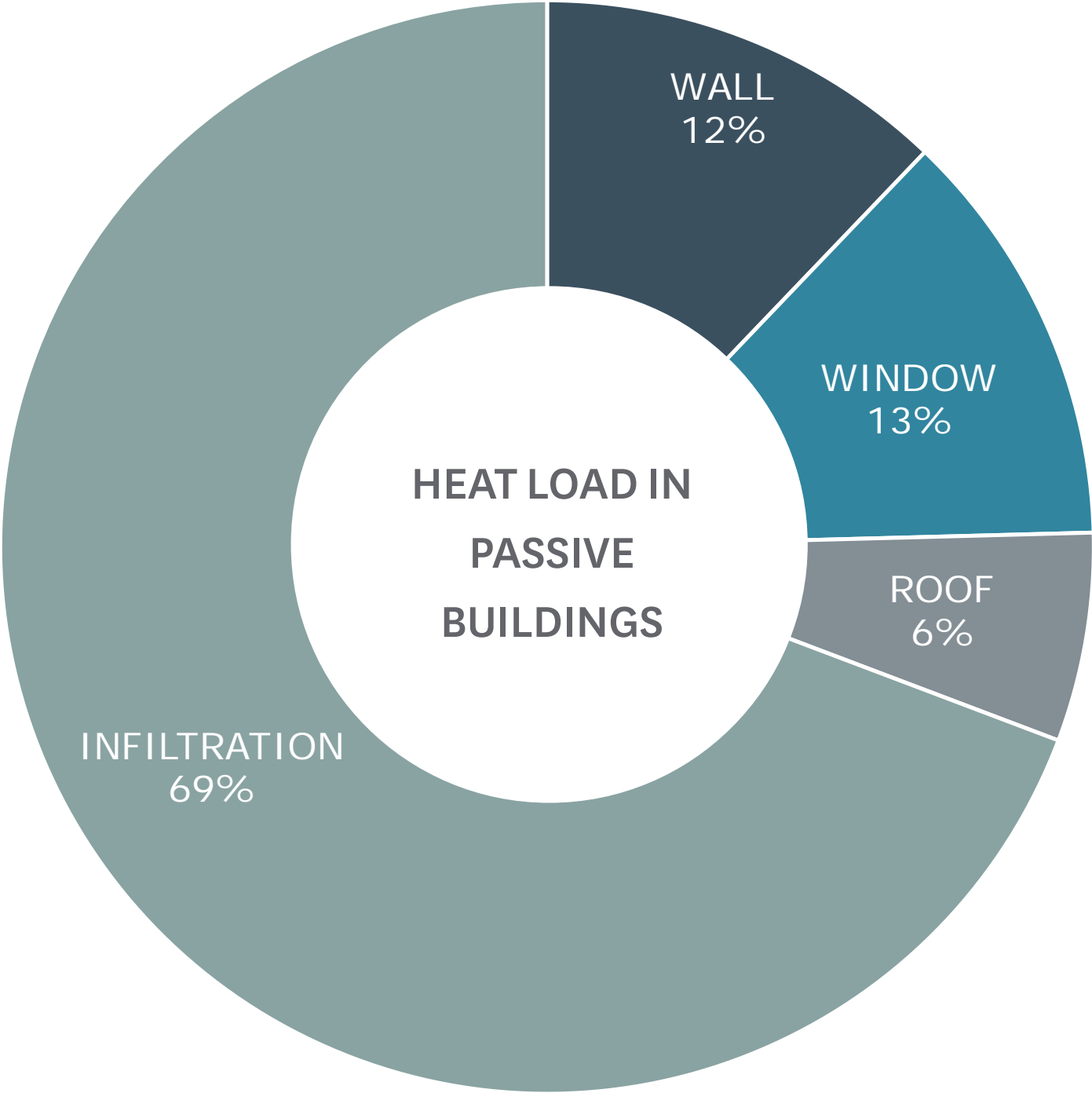
Climate Analysis | NORMAL ENVELOPE



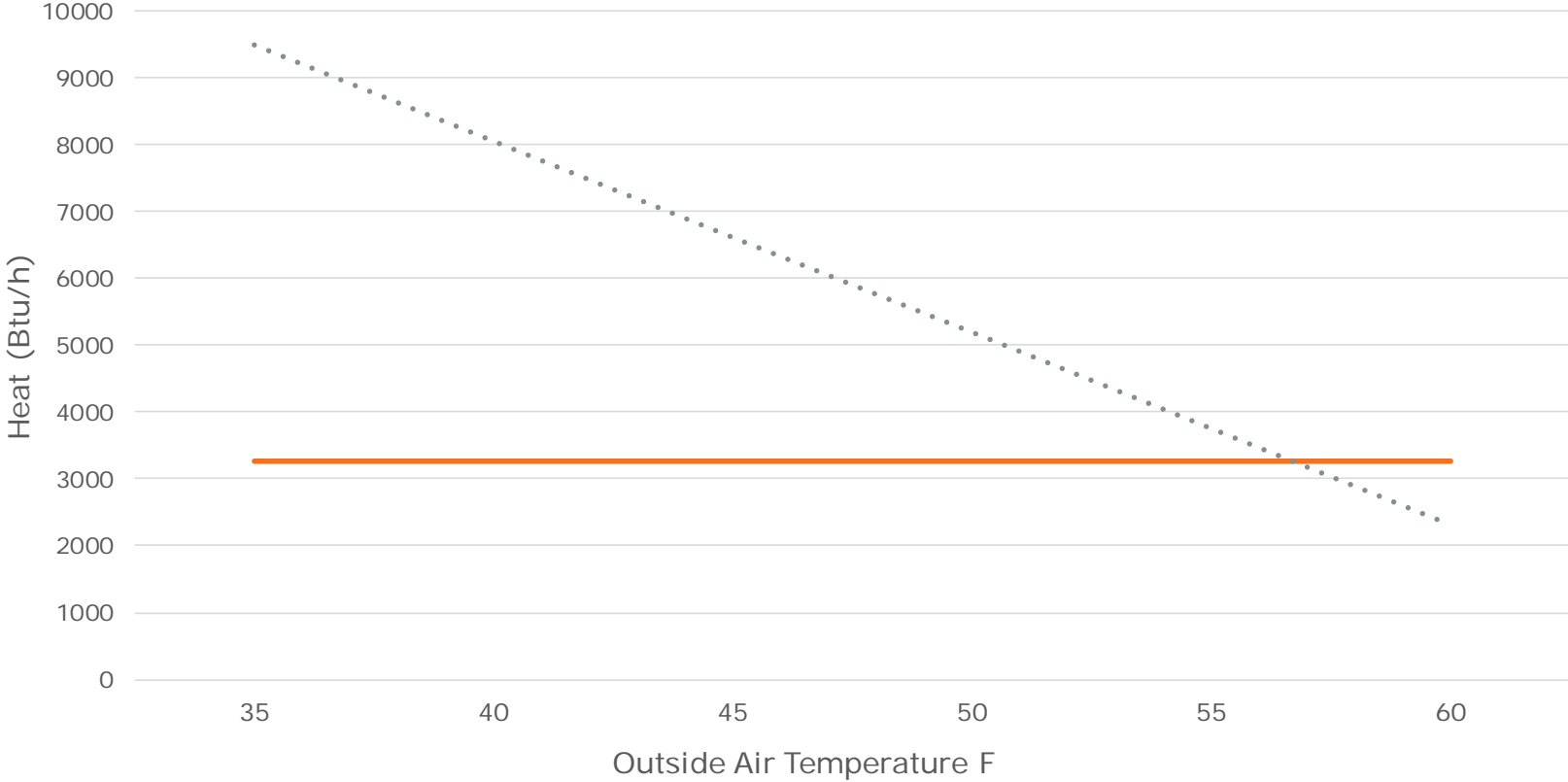
Climate Analysis | PASSIVE ENVELOPE



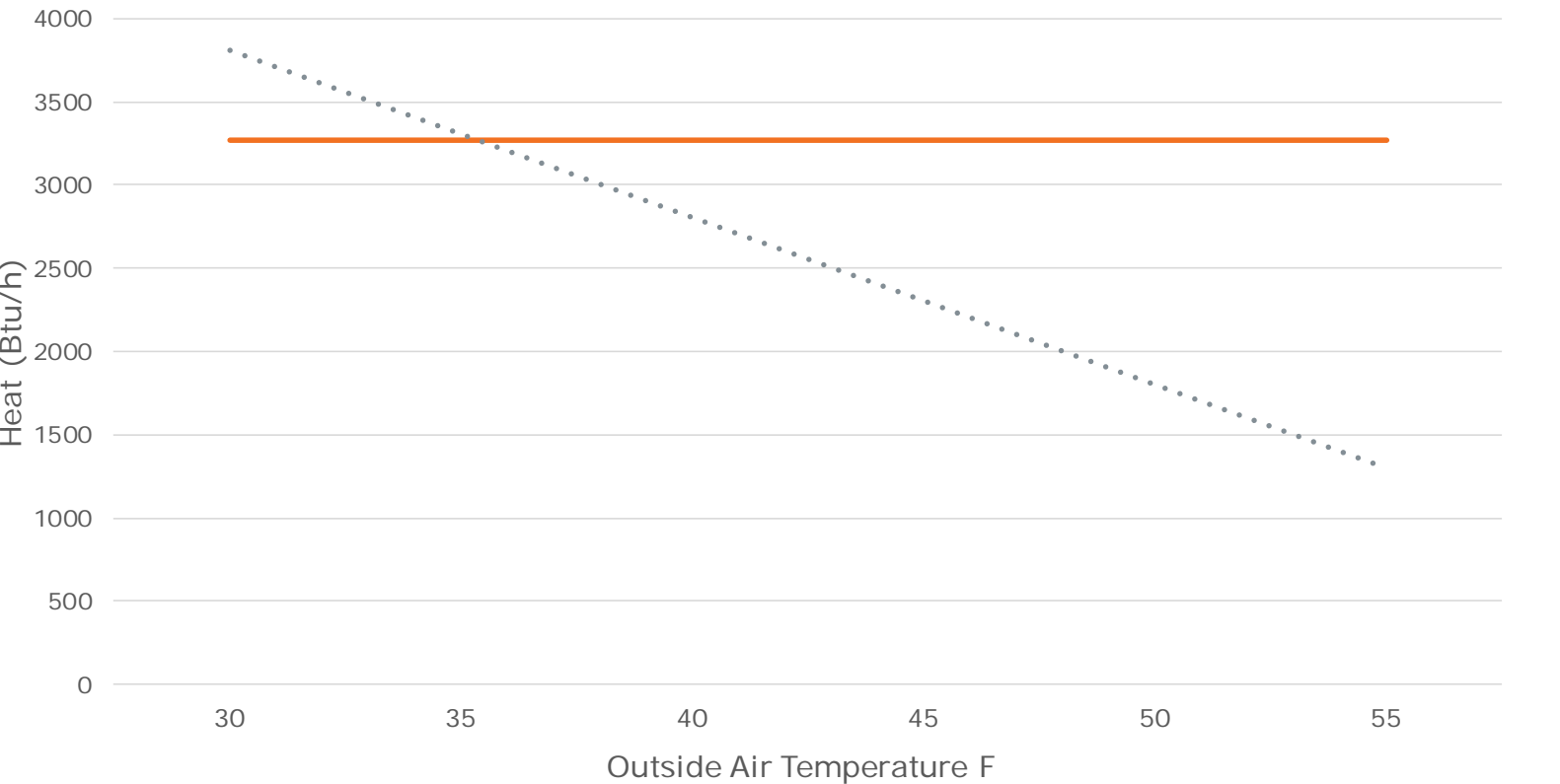
Climate Analysis | BALANCING HEAT LOSS



Balance Point Temperature

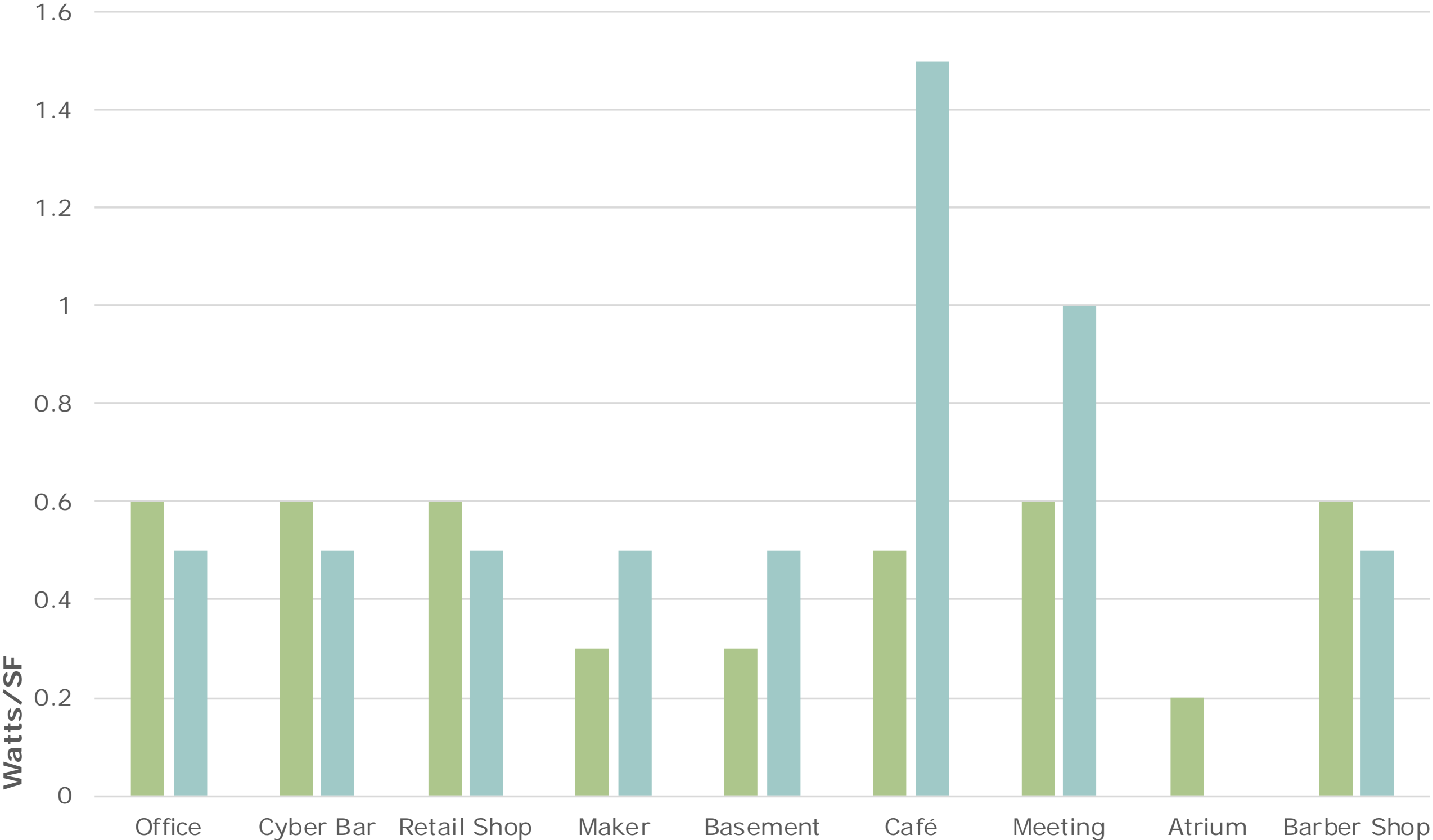


Balance Point Temperature | Passive



— Heat Gain ··· Heat Loss

Lighting Power Densities and Plugloads for Various Space Types



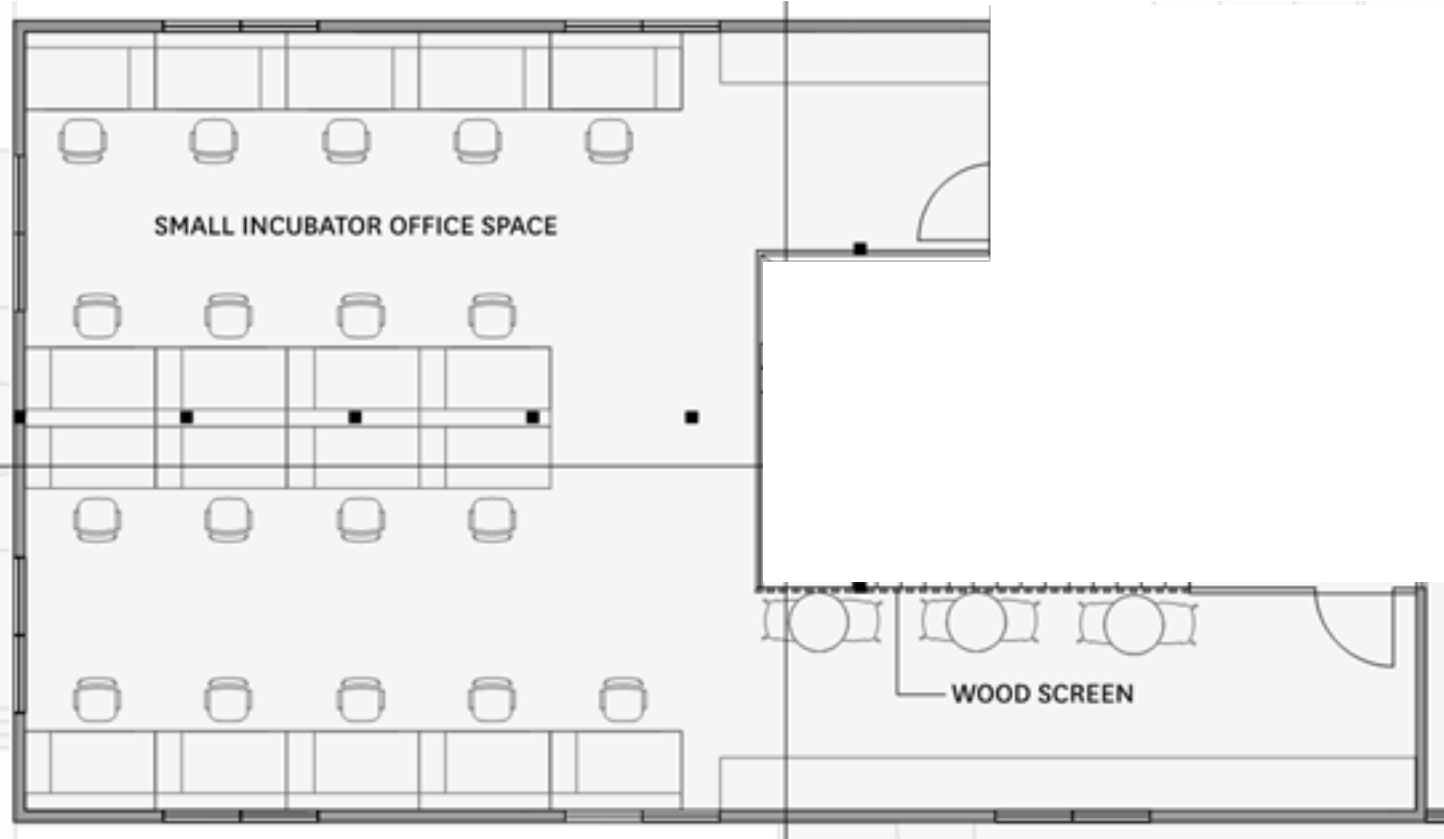
LEGEND
■ Lighting Power Density
■ Plugload

Space Schedules

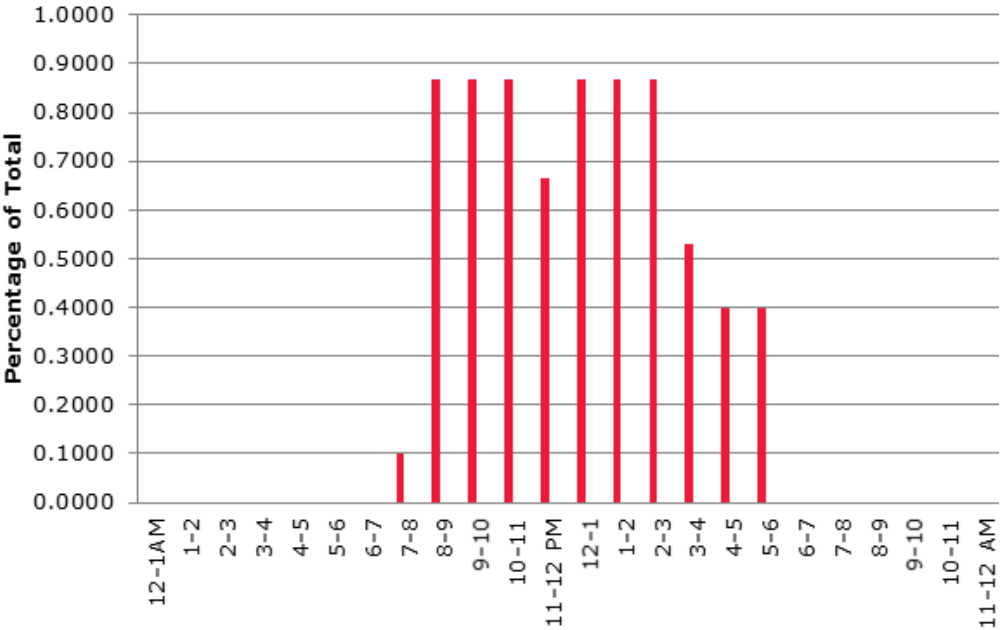
OFFICE, BOOKKEEPER'S OFFICE,
MANAGER'S OFFICE

Loads

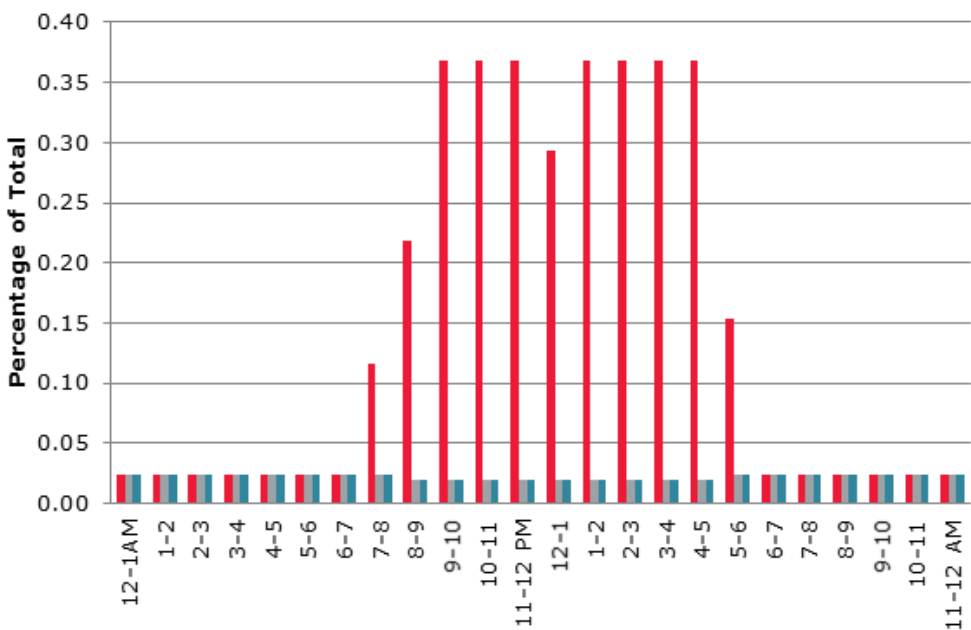
- Lighting power density = 0.6 watts/square foot; full daylighting; occupancy/vacancy sensors
- Assumed equipment: 1 copier/printer (incubator office only), laptop computers.
- Plugload density: 0.5 watts/square foot



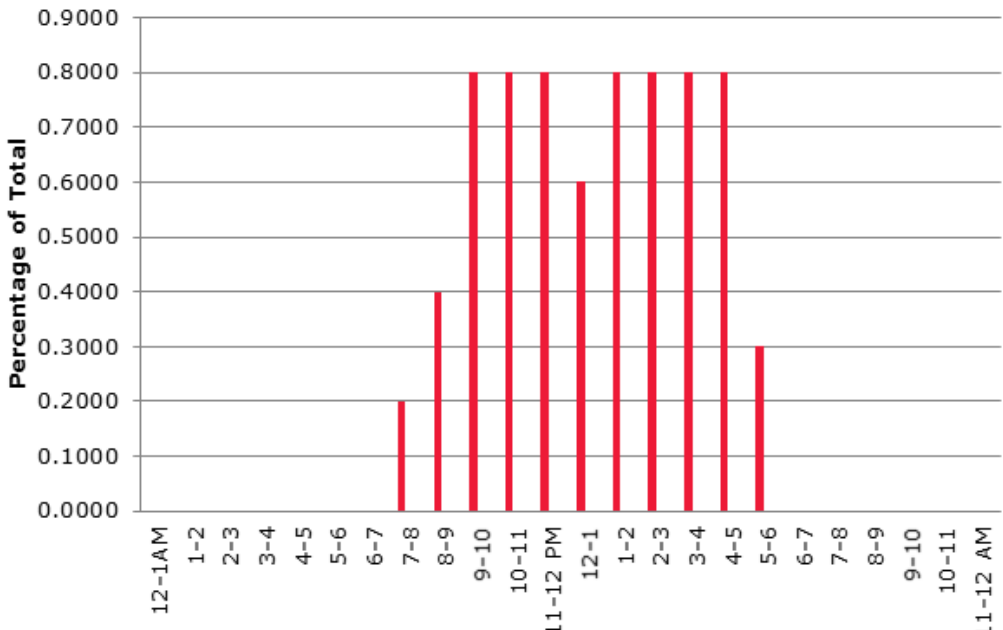
Lighting Schedule



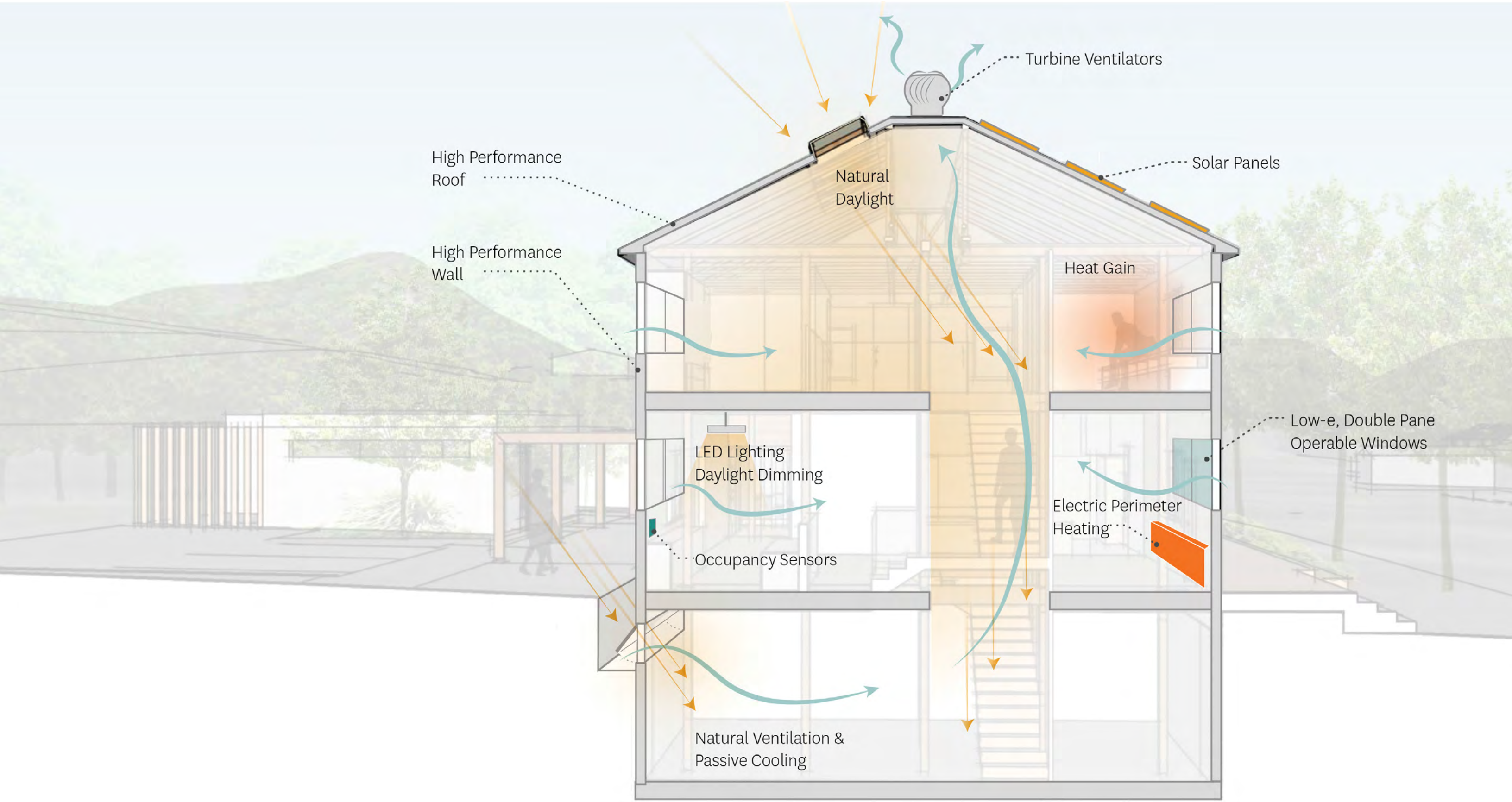
Equipment Schedule



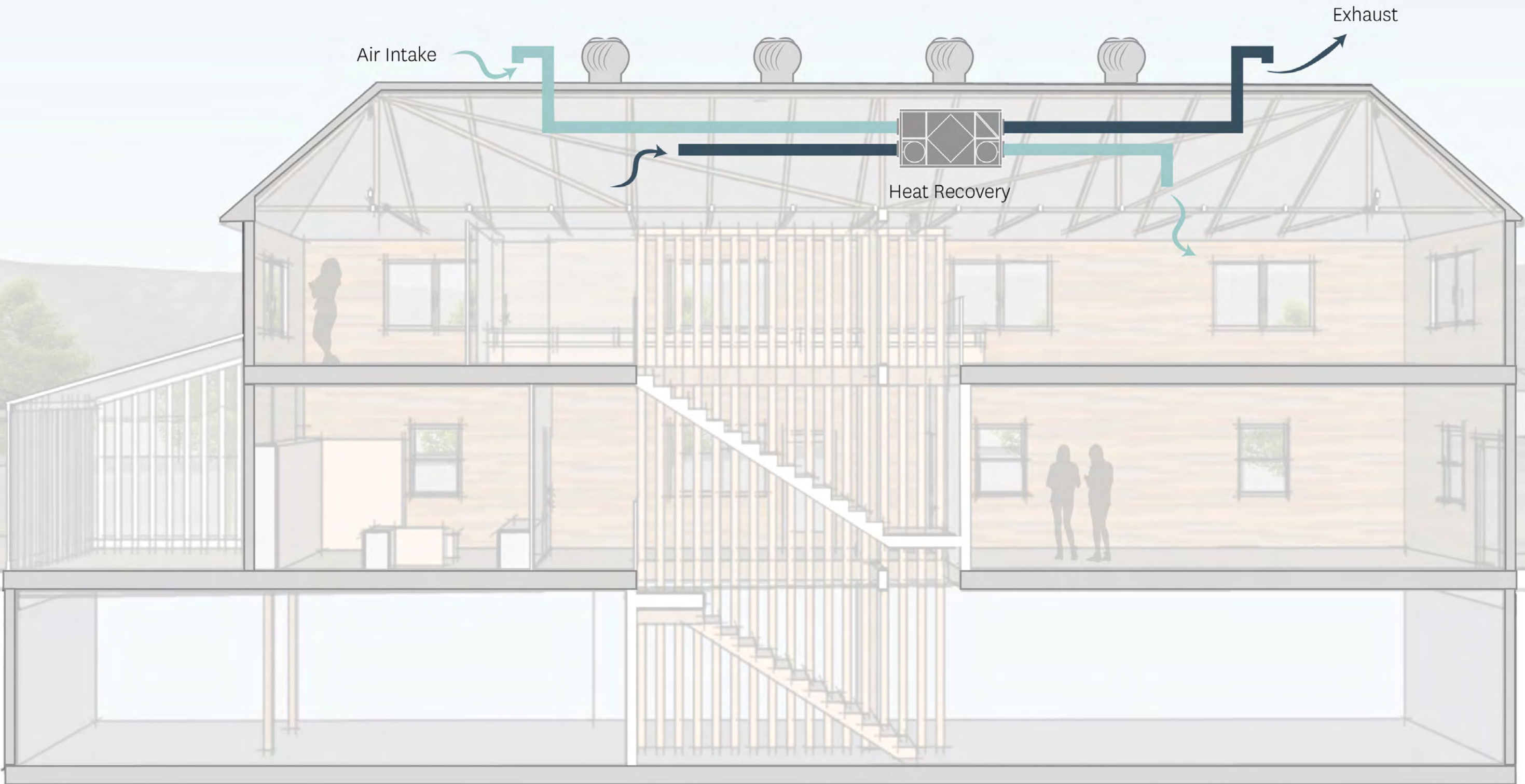
Occupancy Schedule



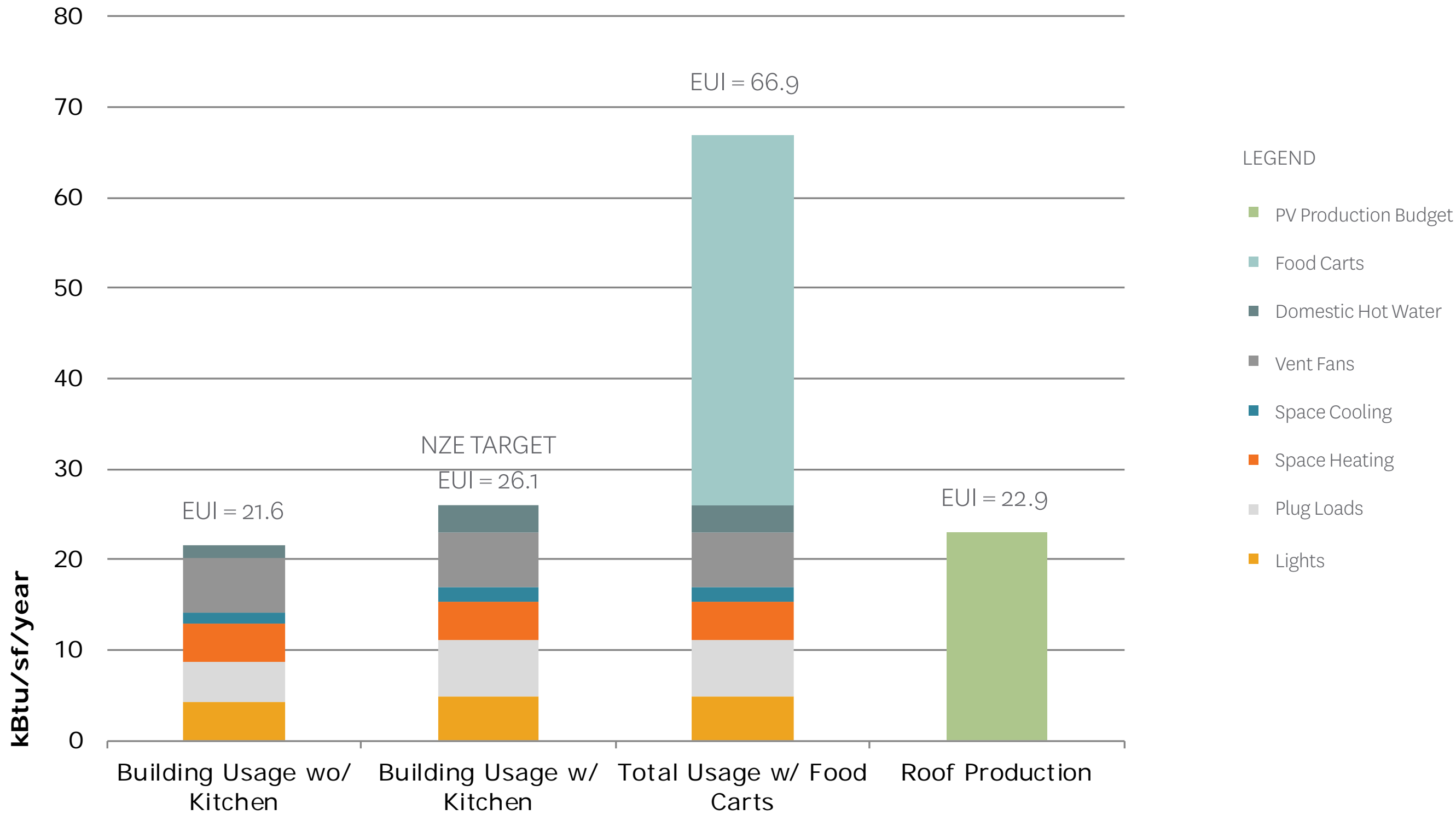
Design Elements to Achieve NZE



Design Elements to Achieve NZE



Energy Breakdown by End-Use



PV Required for Net Zero Energy



Cost Estimate | COST DIFFERENCE PER SF FROM BASELINE TO PROPOSED DESIGN



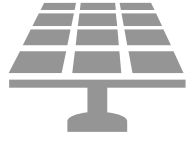
ENVELOPE



HVAC



LIGHTING



RENEWABLES

FIRST COST

\$3



\$2



\$12



-\$10



OPERATION COSTS

\$



\$



\$

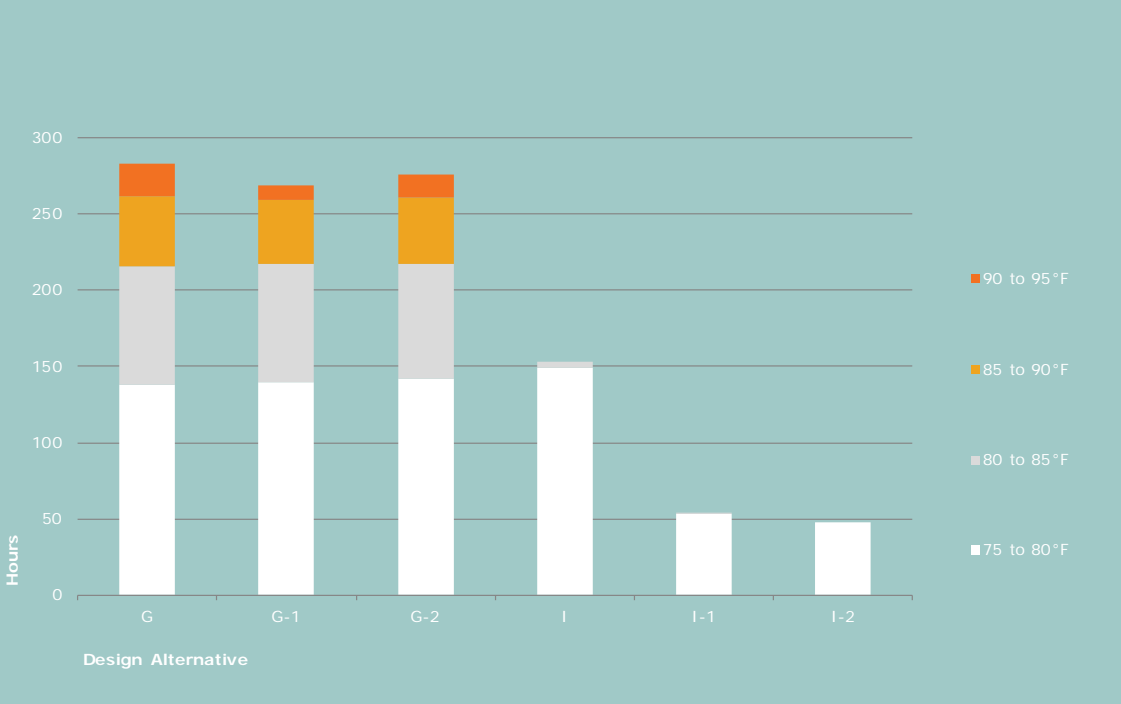


\$



Next Steps

PASSIVE COOLING



METERING



ENERGY STORAGE

