ALLIES FOR EFFICIENCY
SAIF SALEM CAMPUS
PRESENTATION AND
BUILDING TOUR

AUGUST 7 2018

Ankrom Moisan

EnergyTrust of Oregon

GLUMAC

saif corporation

AGENDA

- ENERGY TRUST OF OREGON INTRODUCTION
- SAIF PROJECT INTRODUCTION
- DESIGN APPROACH
- PATH TO NET ZERO
- MEP SYSTEMS
- BUILDING TOURS AFTER PRESENTATION

ABOUT - ENERGY TRUST OF OREGON

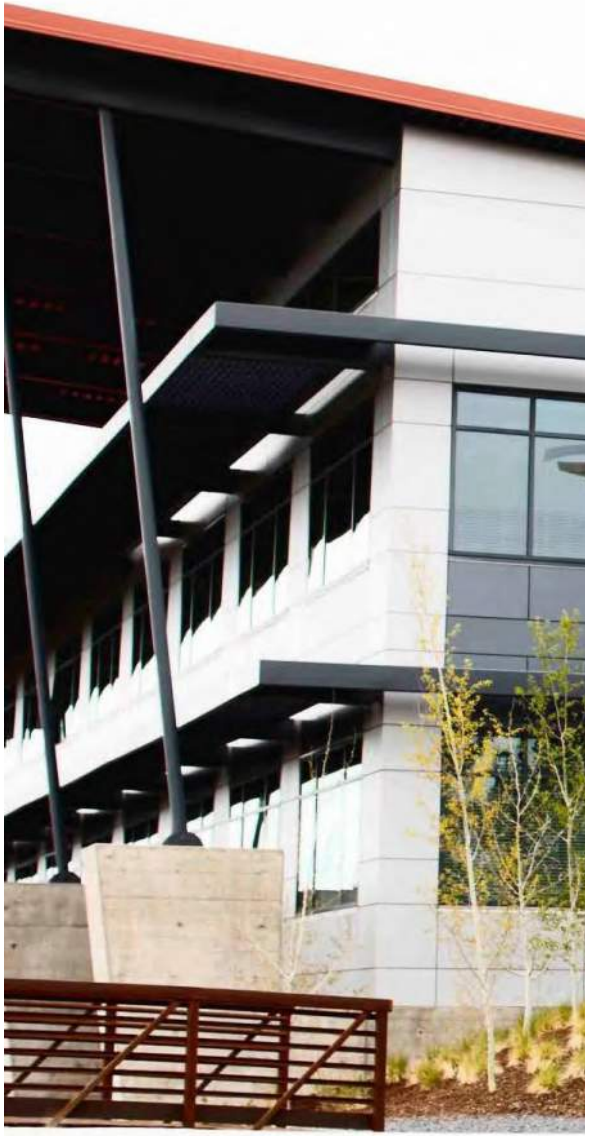
Independent nonprofit organization dedicated to helping utility customers invest in and benefit from energy efficiency and clean, renewable power.

We provide:

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

ENERGY TRUST - NEW BUILDINGS

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



EnergyTrust of Oregon

TRAINING & 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.

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

UPCOMING TRAININGS

August 8 – Portland

2017 Net Zero Fellowship Research

Brightwork's Approaching Net Zero for Today's Buildings

August 15 - Portland

Building Energy Simulation Forum

OHSU Knight Cancer Research Building Energy Modeling

QUESTIONS

For more information about:

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

Contact:

Kriya Kaping, Market Outreach Specialist, New Buildings

kriya.kaping@clearesult.com

EnergyTrust of Oregon

PRESENTERS

ELIN SHEPARD
Outreach Manager | *Energy Trust of Oregon*

MARSHA MALONSON
Project Manager | *SAIF*

MARIAH KIERSEY
Project Manager | *Ankrom Moisan Architects*

BRIAN GOLDCRUMP
Energy Analyst | *Glumac*

Ankrom Moisan

SAIF PROJECT INTRODUCTION

- Remodel existing building to recruit new hires and allow for expansion
- Hired DAYCPM and AMA
- Studied entire Salem Campus
- Updates to parkway building, Church Street and the Church Street building
- Lease Crutcher Lewis integrated early into team

Ankrom Moisan

SUSTAINABILITY TASKFORCE

MUST HAVE

- Healthy & safe design and construction
- LEED Silver equivalent
- Oregon REACH code
- Exceed Oregon's energy code requirements by at least 20 percent (Oregon SEED)
- Energy Star appliances, unless other system outperforms
- Enhanced IAQ performance

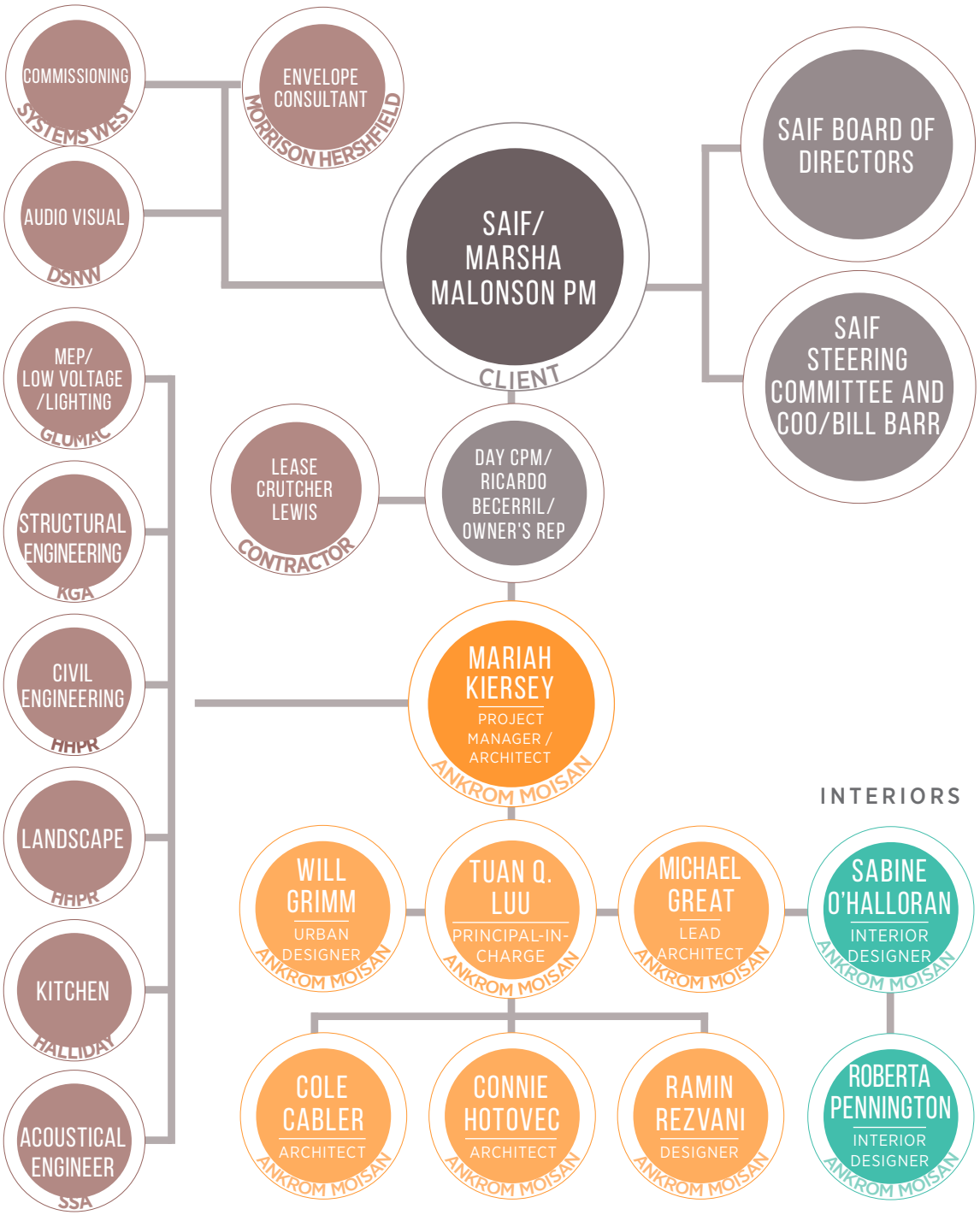
SHOULD HAVE

- Energy efficiency 40% better than code
- Energy efficiency 70% better than CBECS (Commercial Bldg Energy Consumption Survey)
- Sensitive land protection – protect or restore habitat
- Bicycle facilities
- Advanced commissioning
- Enhanced refrigerant management
- Recycle or reuse demolition material
- Use of regional products
- Certified wood
- Efficient interior lighting
- Daylighting
- Thermal comfort

NICE TO HAVE

- Net zero energy
- Renewable energy production
- Visual displays of current energy efficiency
- Rainwater management
- Heat island reduction
- Light pollution reduction
- Advanced water metering
- Advanced energy metering
- Cooling tower water use
- Enhanced refrigerant management
- Quality views

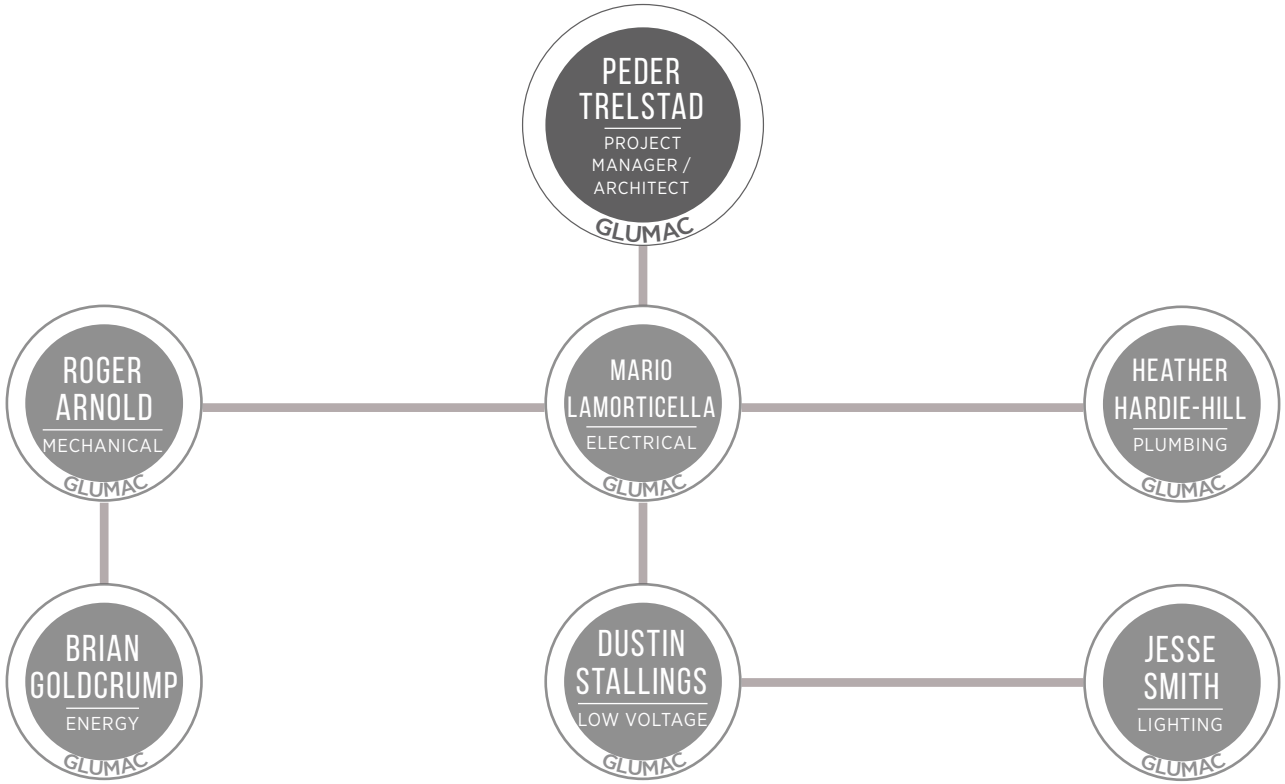
TEAM STRUCTURE



Ankrom Moisan

MEP TEAM STRUCTURE

GLUMAC

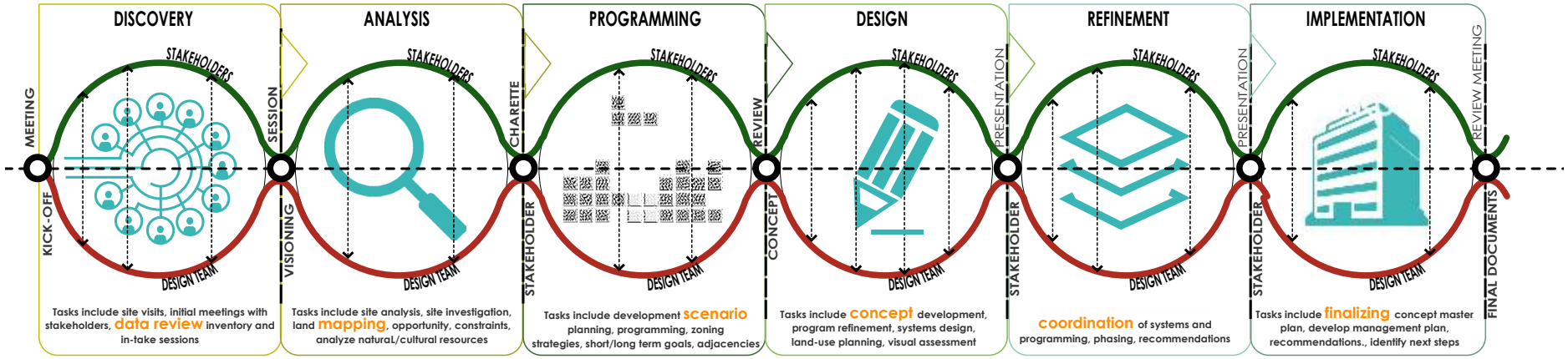


Ankrom Moisan

PROJECT APPROACH

- Design Process
- Data Informed Design
- Quality Control
- Full Team Meetings
- Milestone Meetings for sign off
- Contractor Integration

COLLABORATIVE DESIGN APPROACH



Ankrom Moisan

DATA INFORMED DESIGN STRATEGIES

All items below require the full team to be on board and together:
Owner, Design Team and Contractor

- Inside Out, Outside In
- Setting Design Goals w/ Team
- Surveys
- Guiding Principles
- Observation of Users and Site
- User Group Meetings
- Programming Analysis
- Internal Space Diagrams
- Change Management
- Consultant Integration
- Technical Advocate Form (TA)
- In-House Integrated Enclosure
- Lean Process
- Clash Detection
- Laser Scanning
- Reviews prior to set issuance
- LEED Strategies
- Contractor Pricing from the beginning
- Contractor and Design Team meetings
- Pricing of options

PROJECT APPROACH

Zooming Out

PROJECT APPROACH

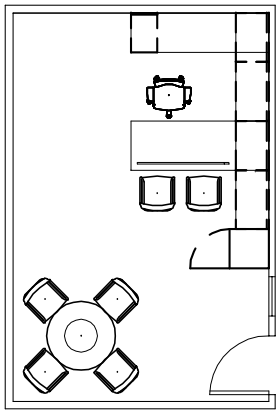
Programming Analysis

- Asking the Right Questions
- Visioning Sessions
- User Group Input
- Anything is Possible

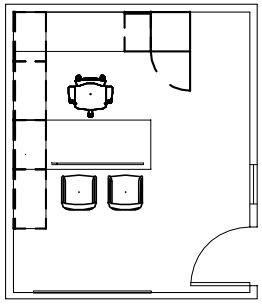
Future - Phase 2
39 sq. ft.

Future - Phase 3
11.3 sq. ft.

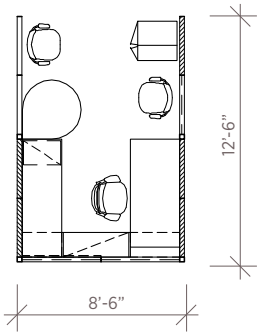
Workstation Evolution



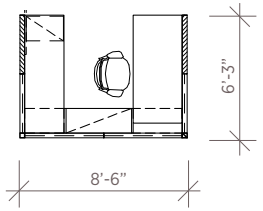
Executive Office
180 sq. ft. minimum



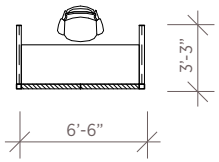
Private Office
130 sq. ft. minimum



Manager Station
106 sq. ft.



Standard Station
53 sq. ft.



Hotelling/Guest Station
21 sq. ft.

Workstations begin to influence overall building design
Examples from Daimler North American Headquarters project

Ankrom Moisan

DESIGN

Design Ideas

- Employee entry
- Not next to trash compactor
- Universal design
- Varying collaboration types
- Connectivity
- Security

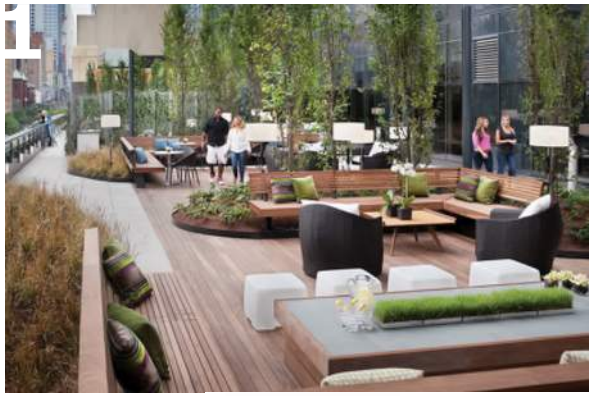
Ankrom Moisan

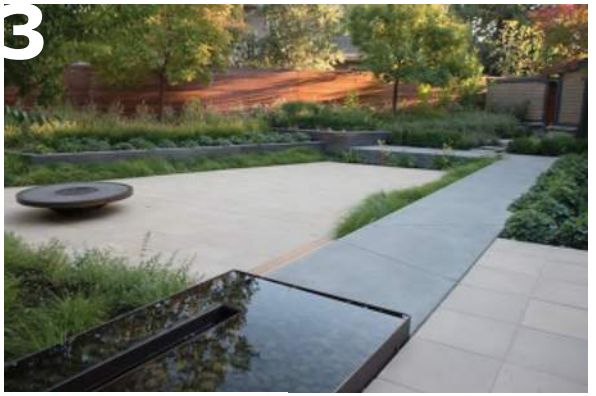
VISIONING STUDY

Interior images selected during survey

SAIF -SURVEY RESULTS

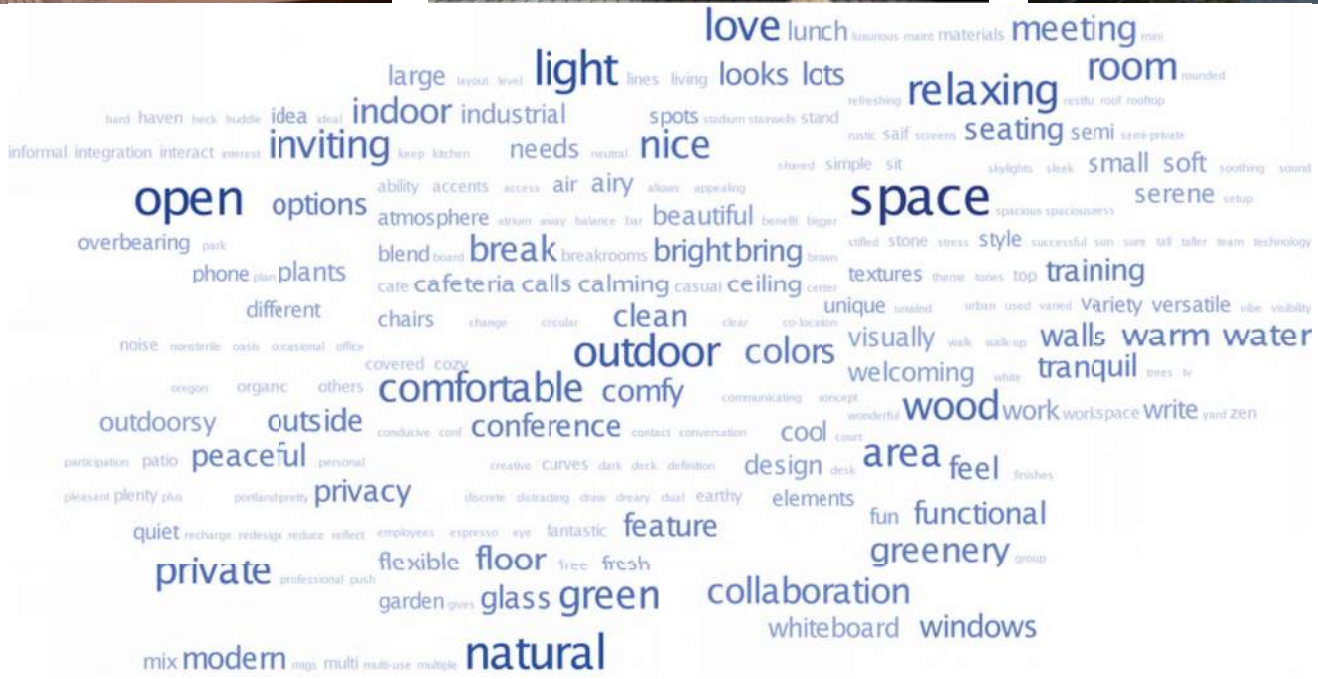
TOP THREE - INTERIORS





OVERALL PLUSES

1. Open
2. Natural
3. Light
4. Comfortable
5. Private
6. Relaxing
7. Collaboration
8. Inviting
9. Welcoming
10. Warm



OVERALL MINUSES

1. Industrial
2. Cold
3. No privacy
4. Too open
5. Too modern
6. Uncomfortable
7. Wasted space
8. Too open to elements
9. Too “jetsons”
10. Not inviting

Ankrom Moisan

PROJECT APPROACH

INSIDE OUT

OUTSIDE IN

INSIDE-OUT INFORMANTS

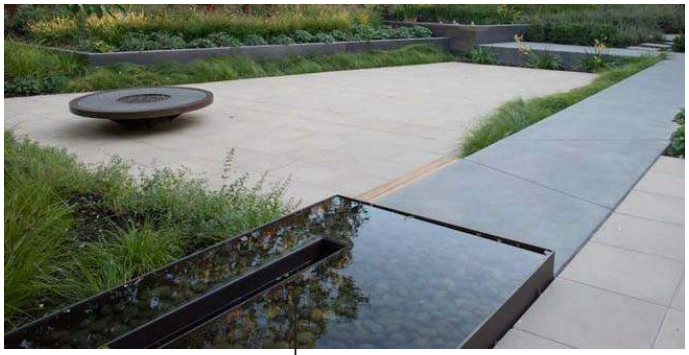
- Office Layout
- Core / Shell
- Air
- Light
- Orientation
- Amenity
- Identity

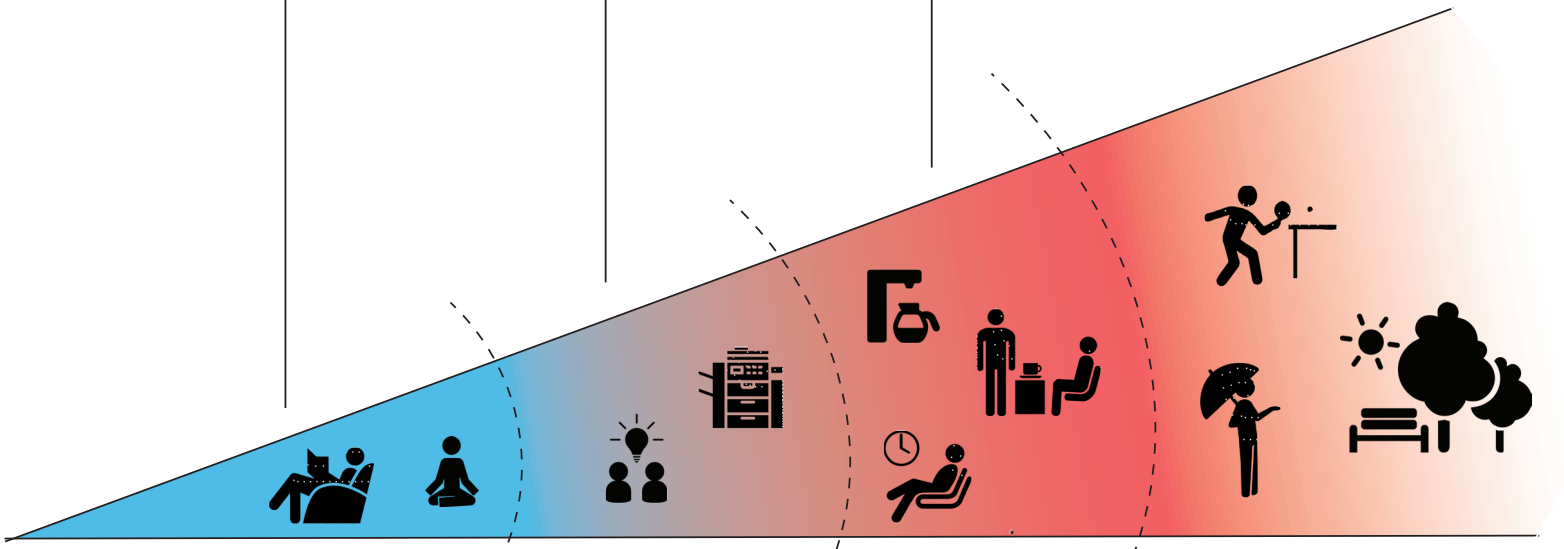
OUTSIDE-IN INFORMANTS

- Site / Neighborhood
- Climate
- Approach / Access
- Views
- Amenity
- City Assets
- Zoning
- Perspective Shift

Ankrom Moisan

INSIDE OUT OUTSIDE IN





QUIET
LIBRARY

comfortable
private
relaxing

COMMUNITY
FAMILY ROOM

modern
productive
collaboration

SOCIAL
KITCHEN

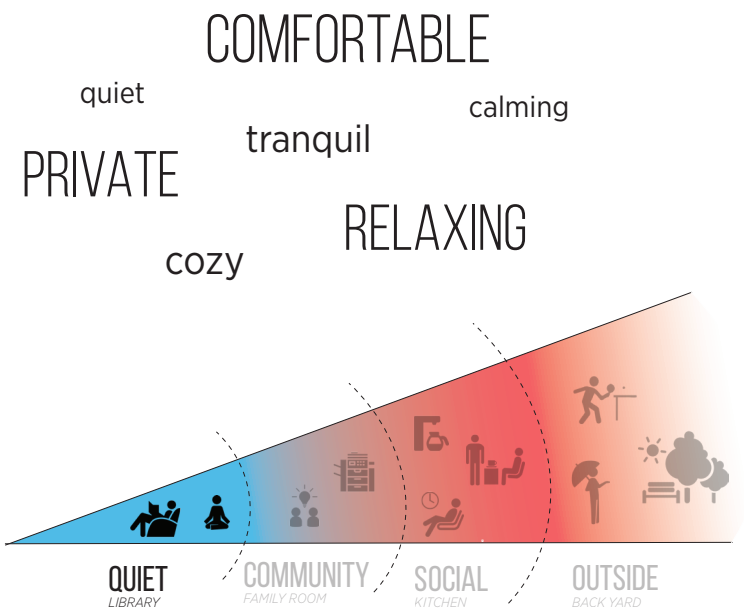
inviting
welcoming
warm

OUTSIDE
BACK YARD

light
natural
greenery

Ankrom Moisan

INSIDE OUT OUTSIDE IN



Ankrom Moisan

INSIDE OUT OUTSIDE IN

MODERN

fresh

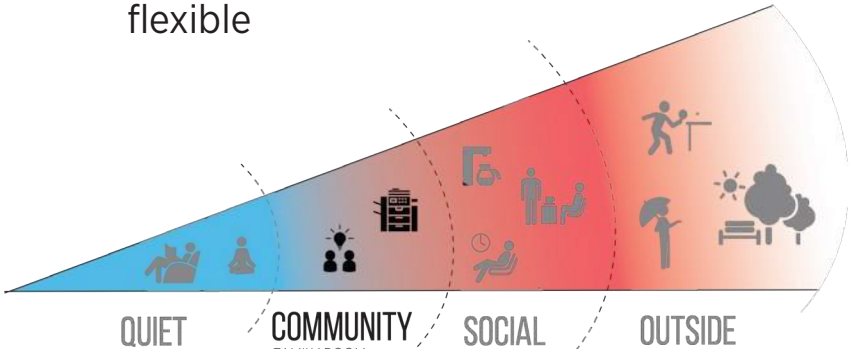
clean

versatile

PRODUCTIVE

COLLABORATION

flexible



Ankrom Moisan

INSIDE OUT OUTSIDE IN

INVITING

greenery

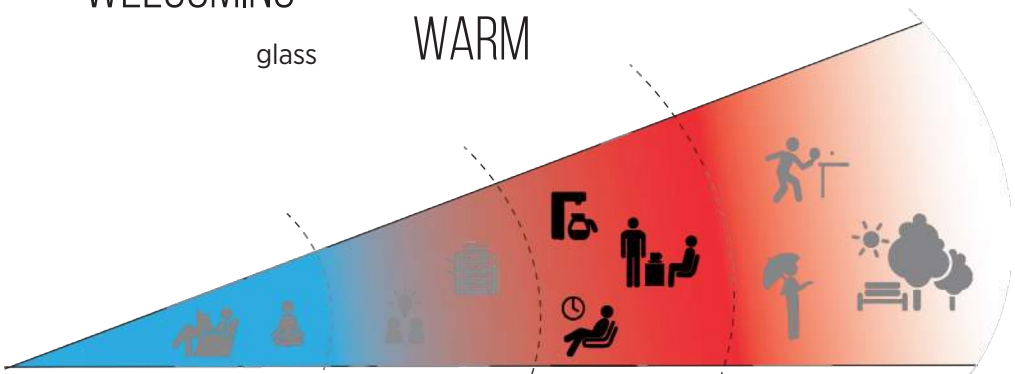
outdoorsy

WELCOMING

open

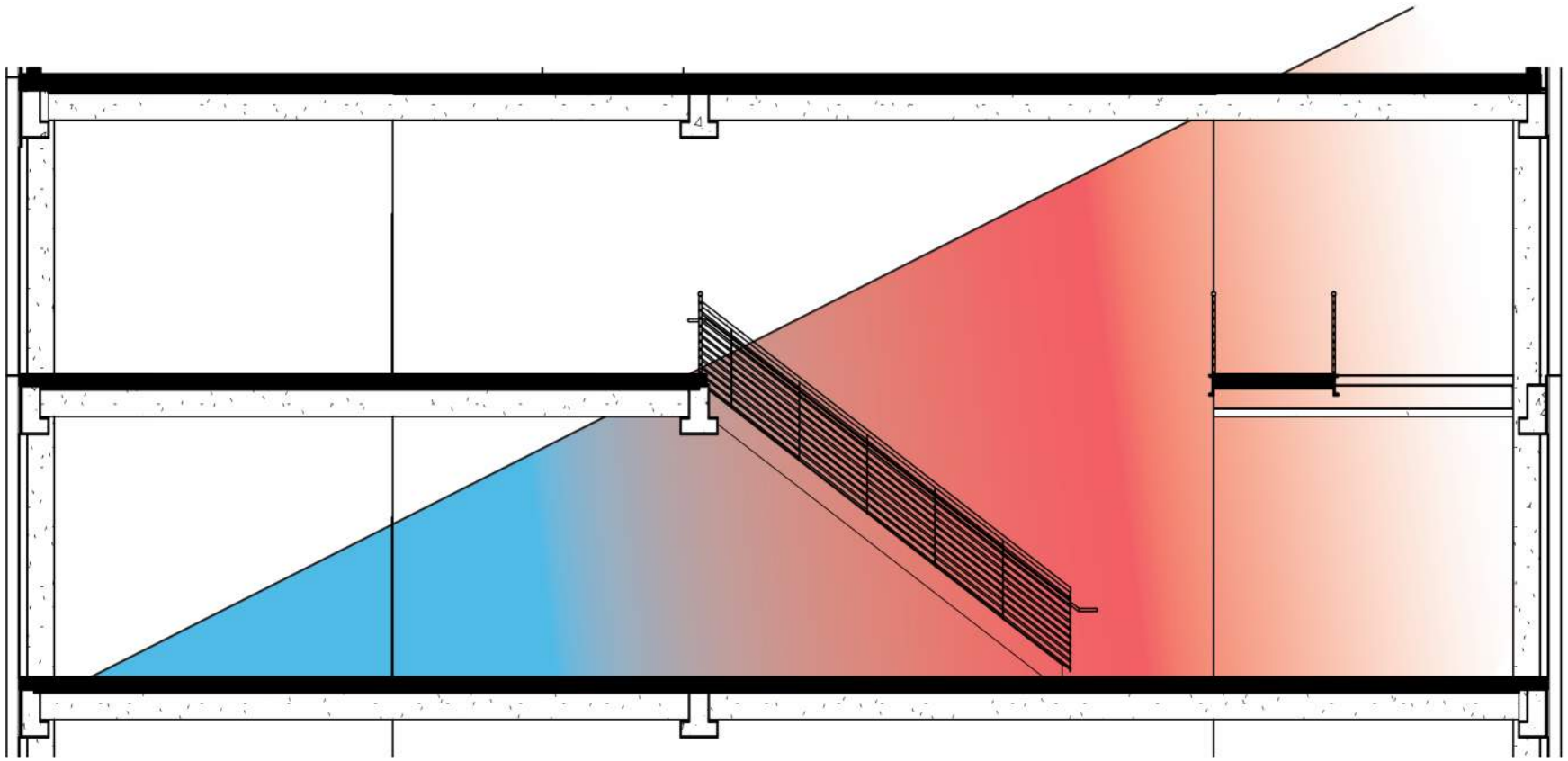
WARM

glass



Ankrom Moisan

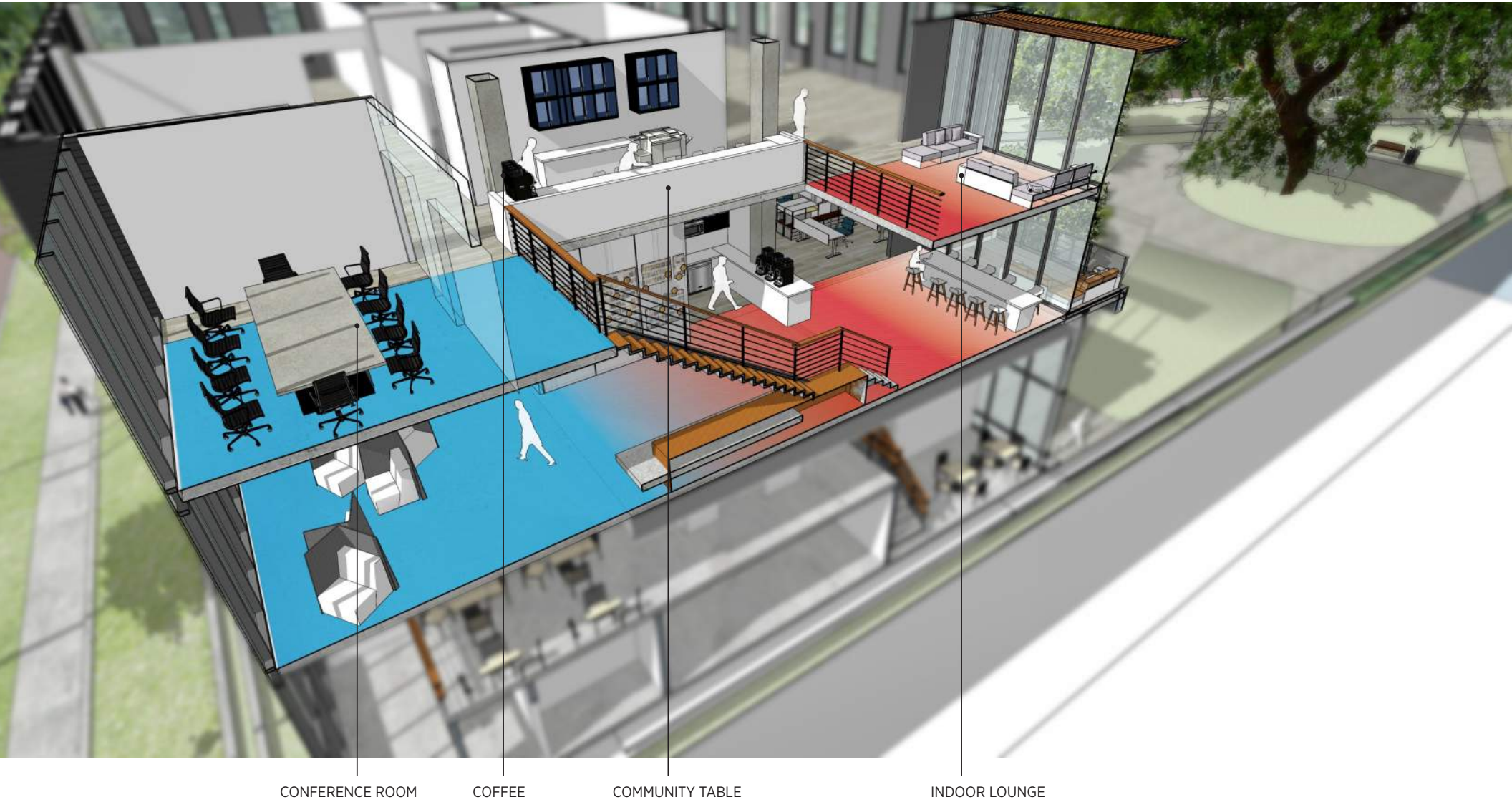
INSIDE OUT OUTSIDE IN



QUIET COMMUNITY SOCIAL OUTSIDE

Ankrom Moisan

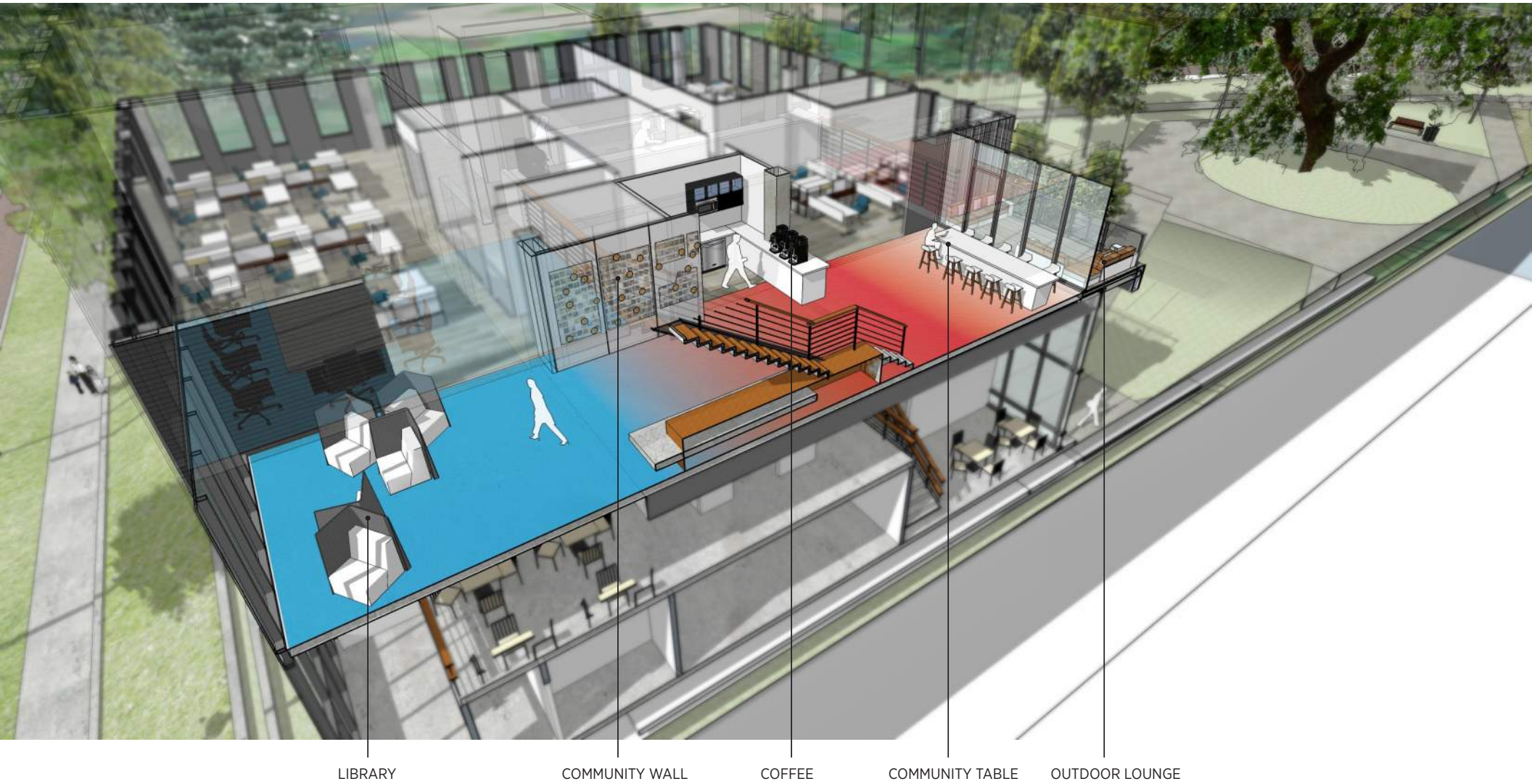
INSIDE OUT OUTSIDE IN



Floor 4 - Axonometric (Looking South)

Ankrom Moisan

INSIDE OUT OUTSIDE IN



Floor 3 - Axonometric (Looking South)

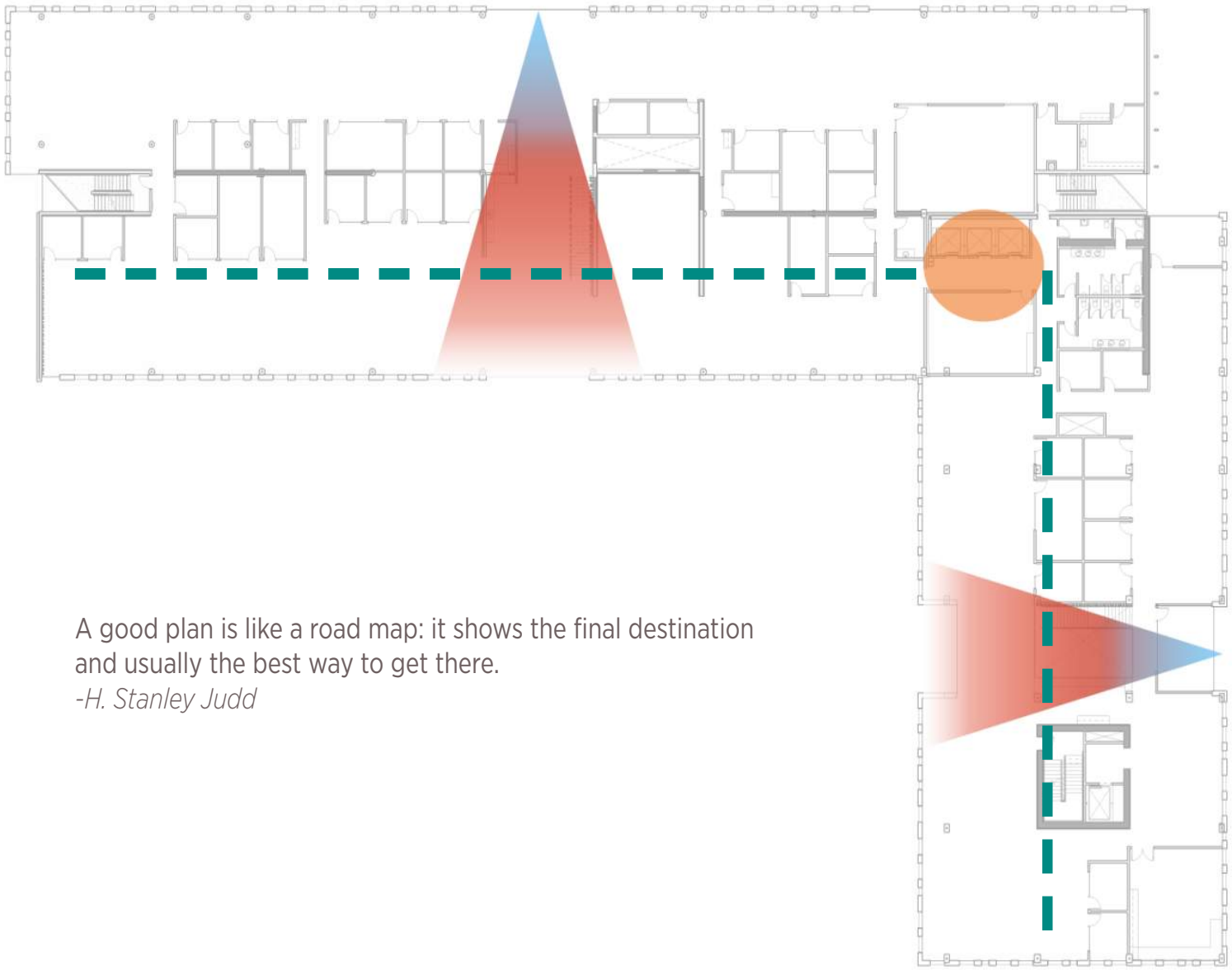
Ankrom Moisan

FINISH CONCEPT

The design celebrates the tree as a metaphor by layering textural fabric through the filter natural light and views. Materials and colors are inspired by seasonal transformations, simplicity of natural form, and textural richness.

Ankrom Moisan

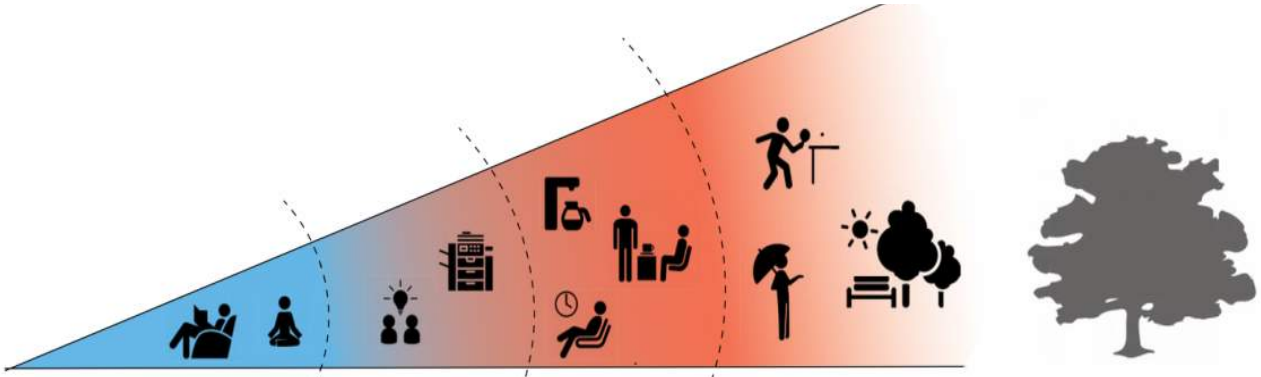
HIEARCHY OF SPACE



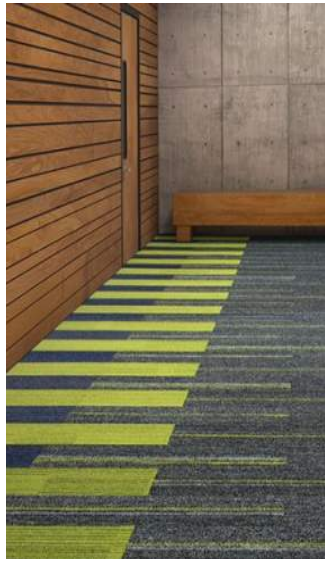
A good plan is like a road map: it shows the final destination and usually the best way to get there.
-H. Stanley Judd

Ankrom Moisan

MATERIAL TRANSITION

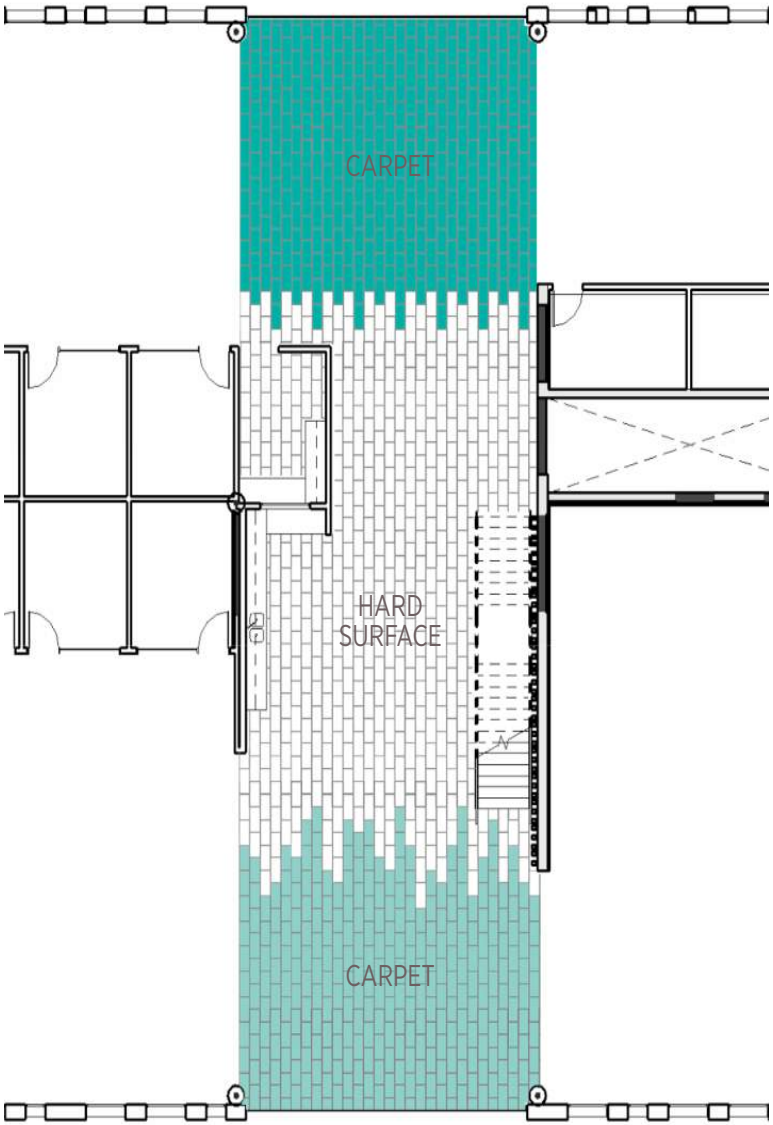


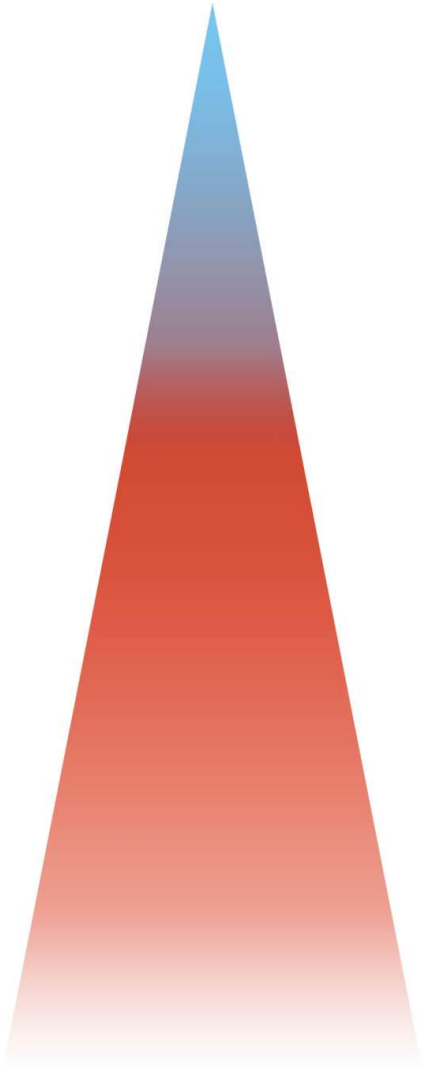
QUIET	COMMUNITY	SOCIAL	OUTSIDE
LIBRARY	*FAMILY ROOM*	*KITCHEN*	*BACK YARD*
soft	modern	warm	light
monochromatic	fresh	bright	natural
cozy	natural	textured	geenery
quiet	inviting	contrast	



Ankrom Moisan

ENLARGED PLAN CONCEPT





LESS LIGHT

SOFT TEXTURE

MONOCHROMATIC

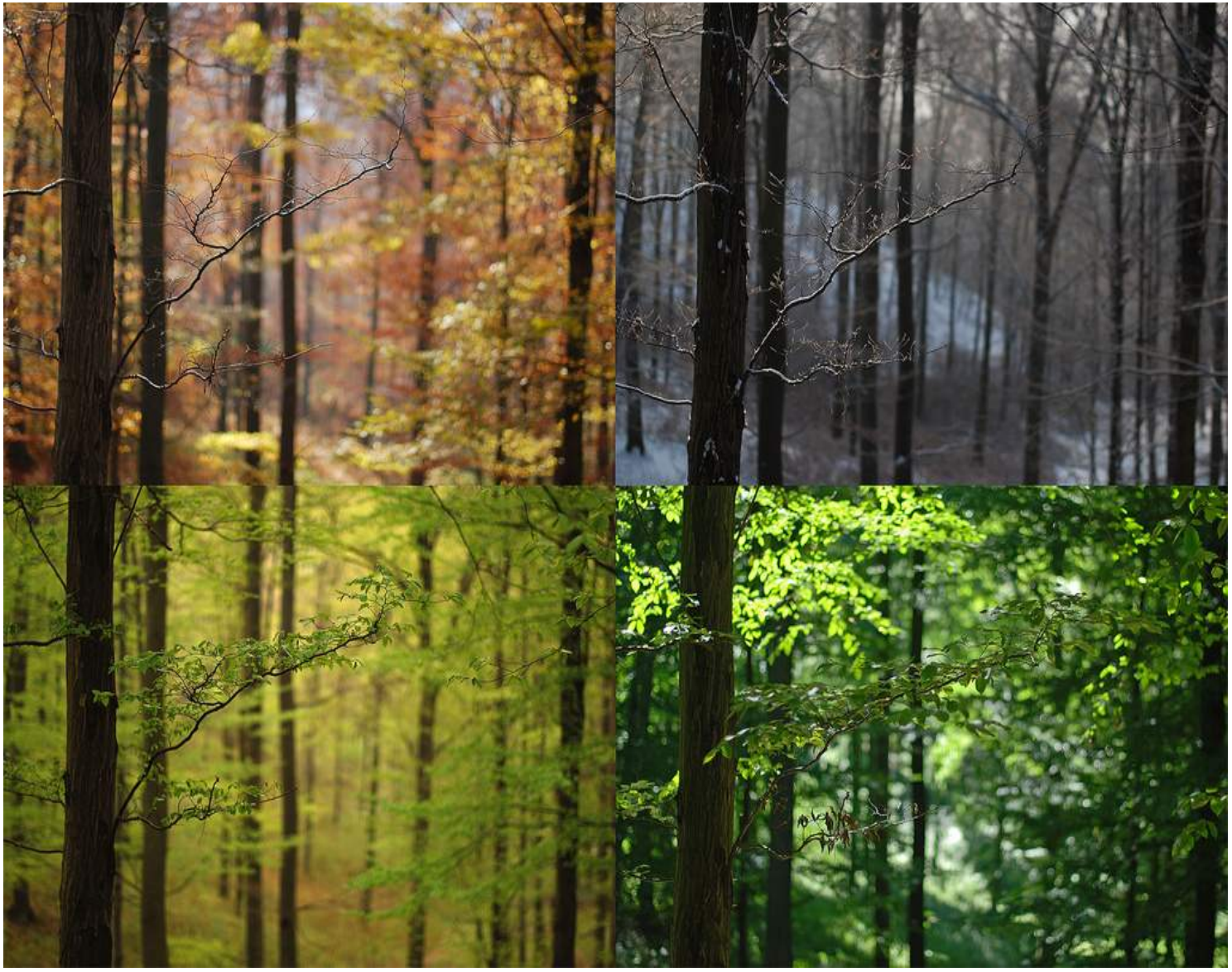
MORE LIGHT

ROUGH TEXTURE

SATURATED

Ankrom Moisan

FINISH INSPIRATION



Materials and colors are inspired by seasonal transformations, simplicity of natural form, and textural richness.

Ankrom Moisan

REFINED AND RADIANT - INSPIRATION



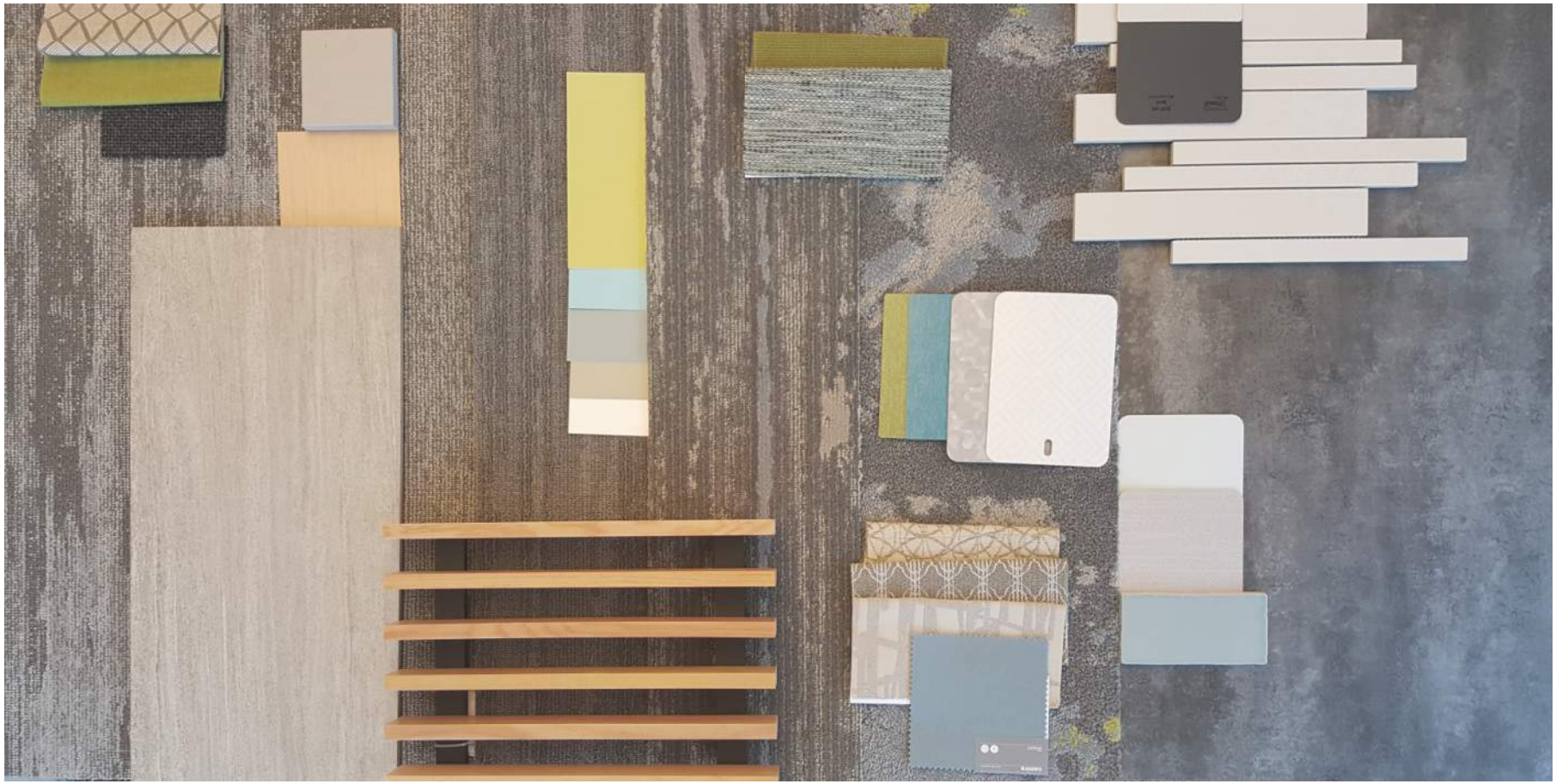






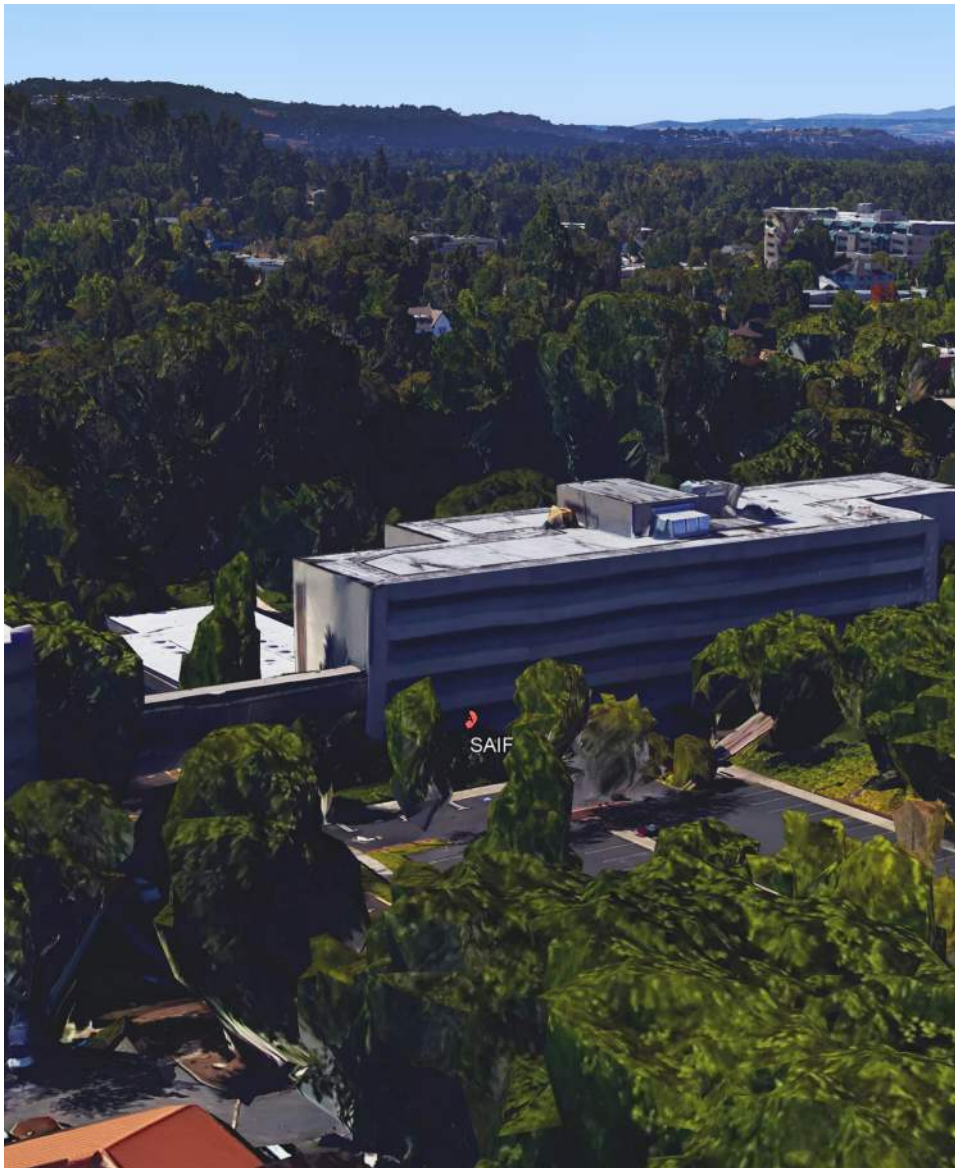
Ankrom Moisan

FRESH AND VIBRANT INSPIRATION



Ankrom Moisan

BEFORE AND AFTER

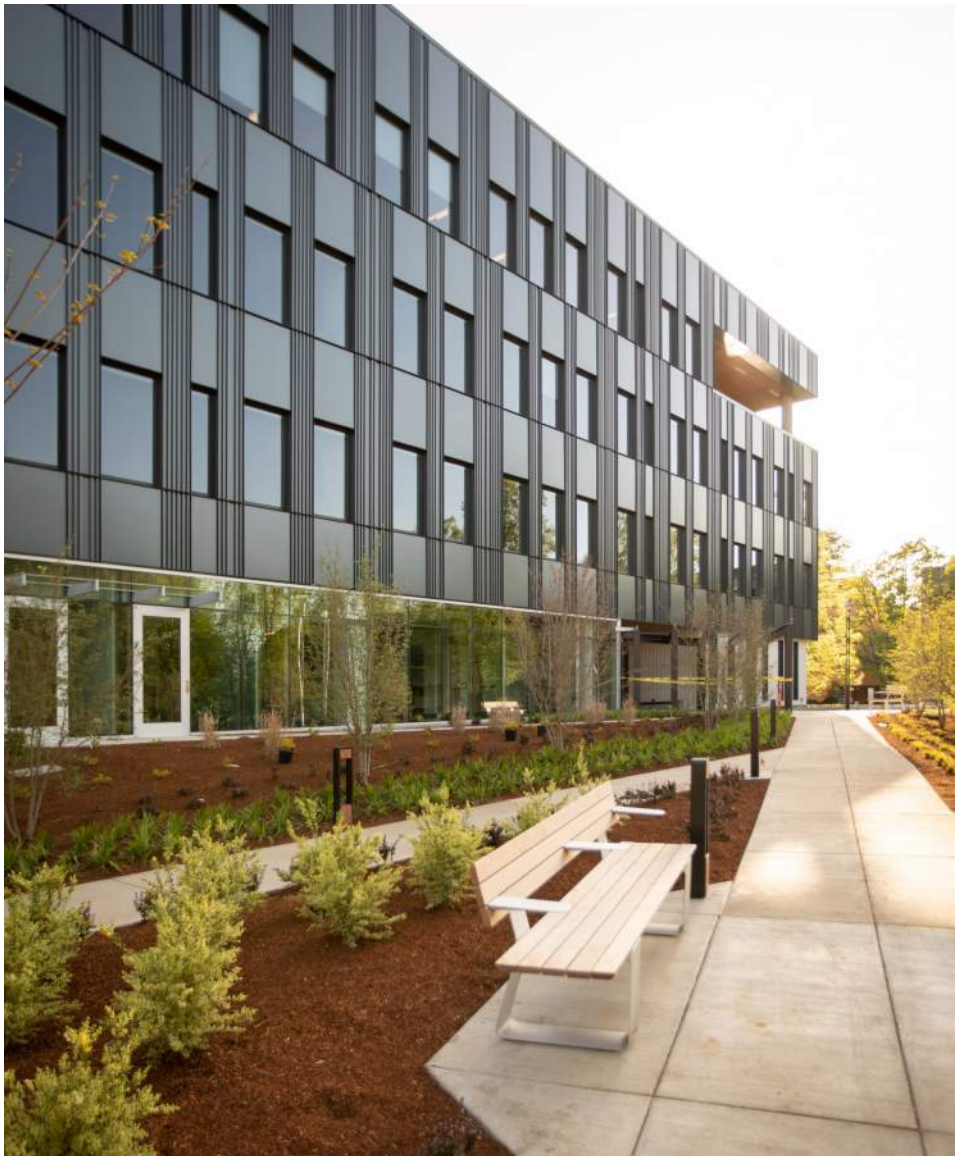


Ankrom Moisan

BEFORE AND AFTER

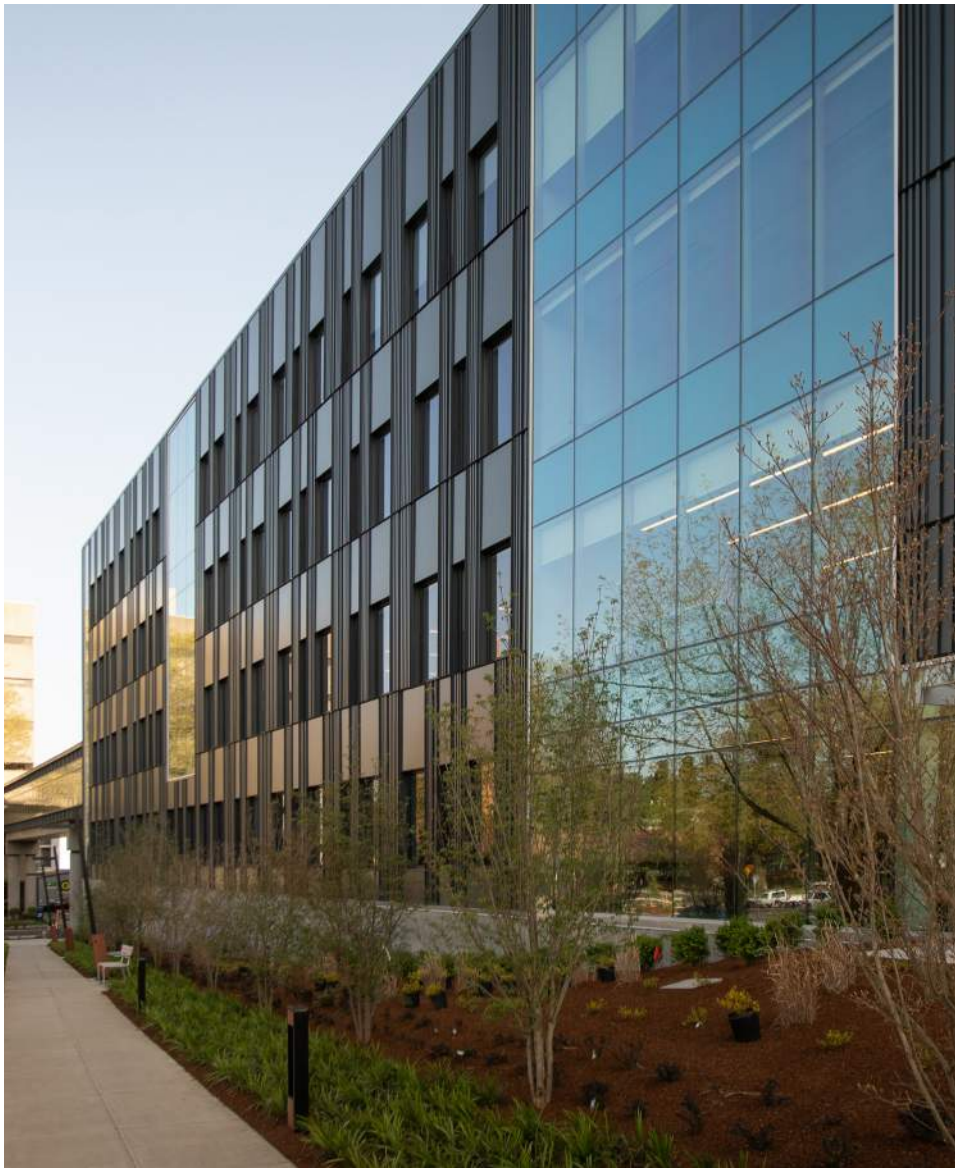
Ankrom Moisan

BEFORE AND AFTER



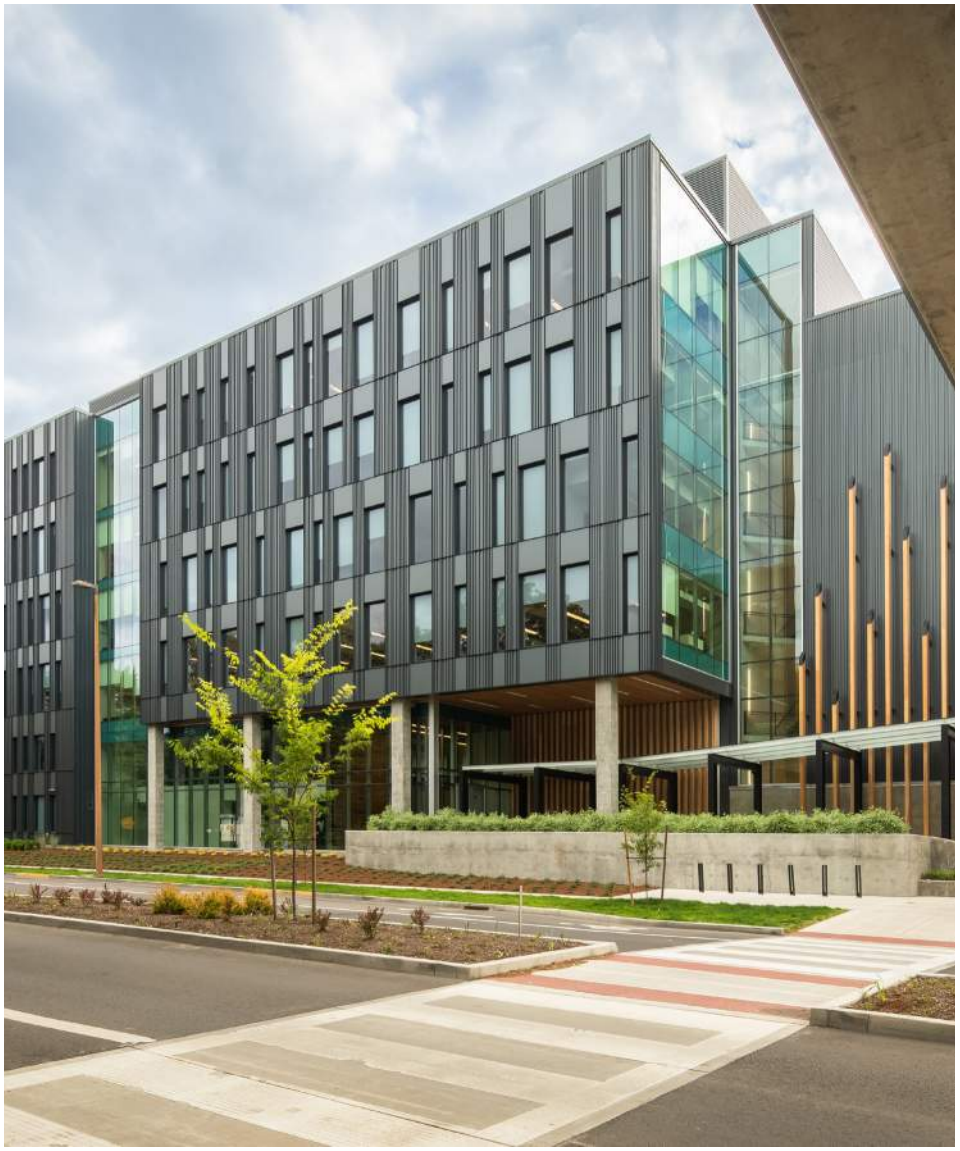
Ankrom Moisan

BEFORE AND AFTER



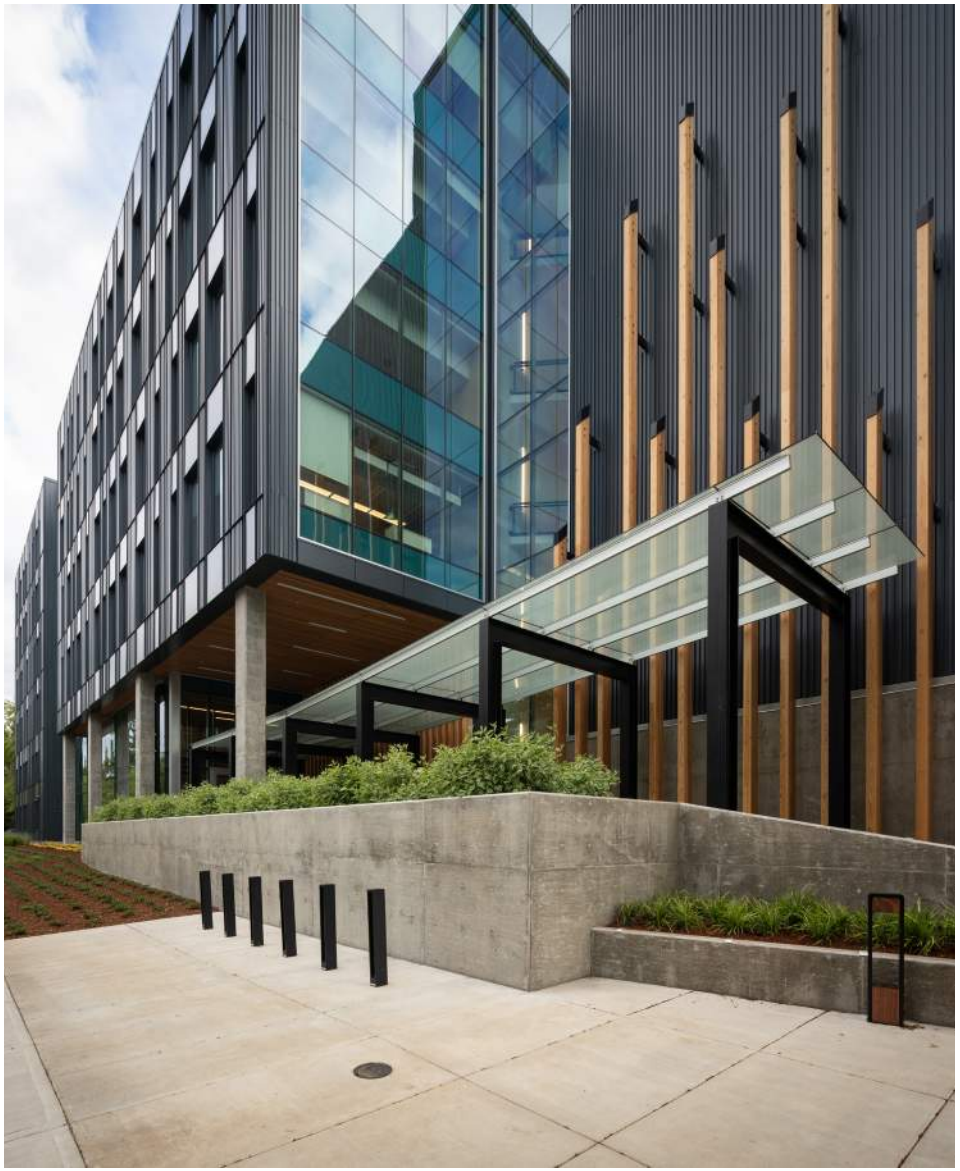
Ankrom Moisan

BEFORE AND AFTER



Ankrom Moisan

BEFORE AND AFTER

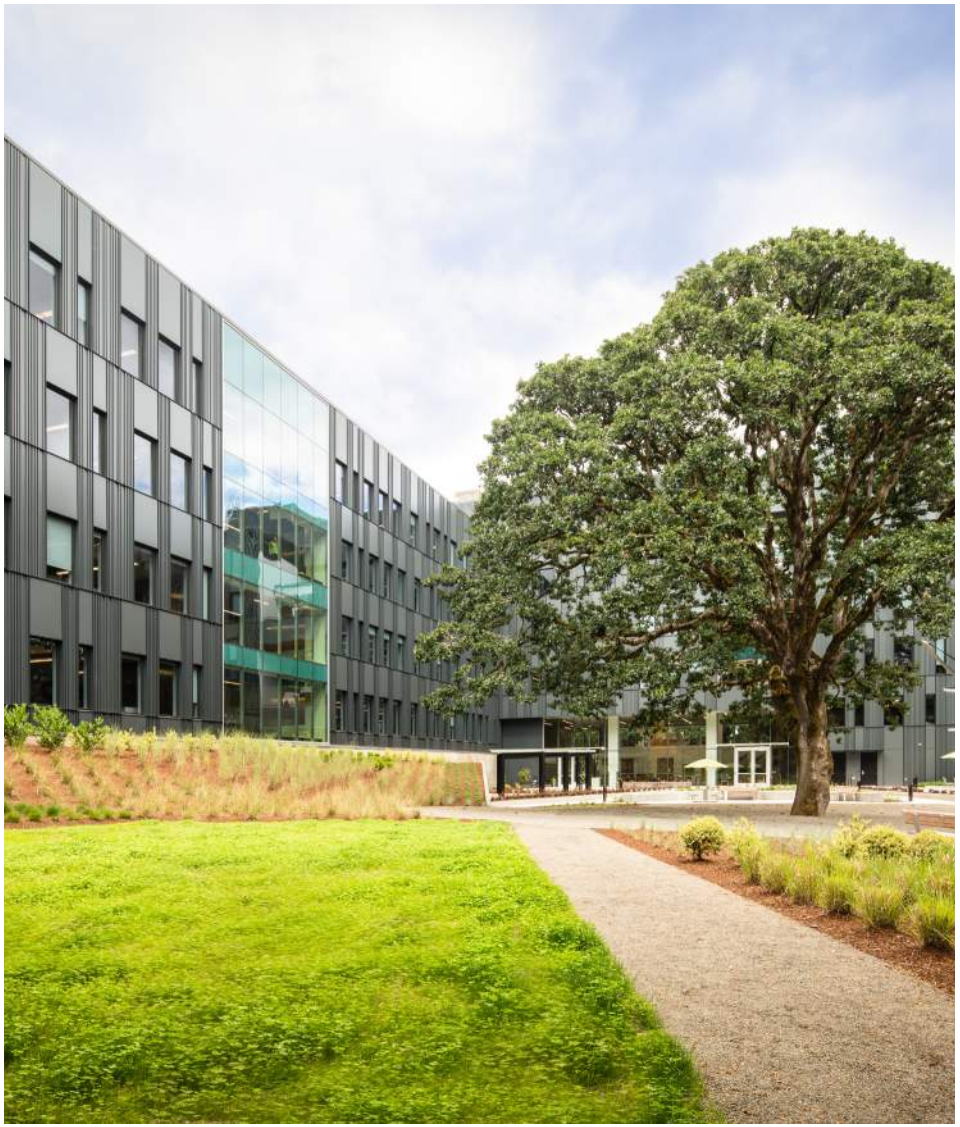


Ankrom Moisan

BEFORE AND AFTER

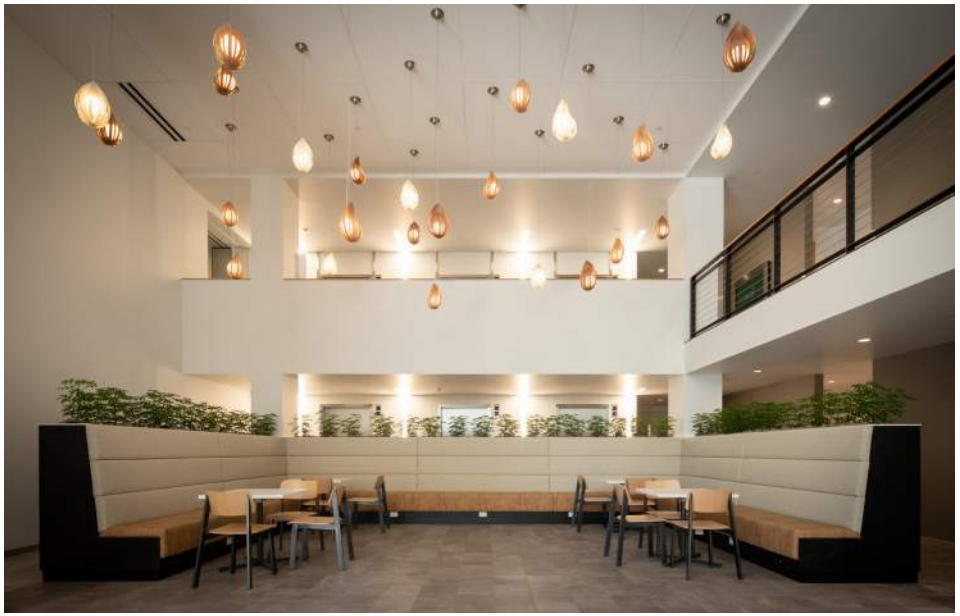
Ankrom Moisan

BEFORE AND AFTER



Ankrom Moisan

NEW INTERIOR CAFE AND BALCONY



Ankrom Moisan

NEW VISITOR ENTRY

Ankrom Moisan

NEW COURTYARD

Ankrom Moisan

NEW WOW SPACE

Ankrom Moisan

Path to Net Zero Cash Incentives & Resources

Energy Trust New Buildings

Elin Shepard, Outreach Manager

Energy Trust of Oregon

New Buildings Program

Overview

- Early design assistance
- Solar ready + public buildings
- Technical assistance
- Path to Net Zero offering

1 Start the Conversation

2 Set Your Target

3 Apply for Incentives

4 Request Payment

EnergyTrust of Oregon

Path to Net Zero

Enhanced incentives for high-performance buildings

EnergyTrust of Oregon

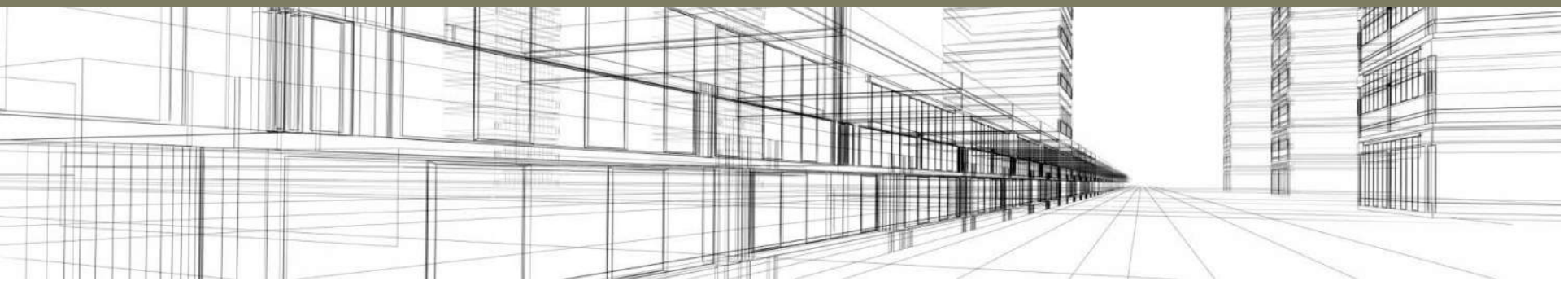
What does it take to get on the path?

- Set an Energy Use Intensity, EUI, target that aligns with the Architecture 2030 Challenge
- Achieve that target through a combination of efficiency and renewable energy strategies

2030 Challenge Year	% Savings over CBECS (Commercial Buildings Energy Consumption Survey)	Estimated Savings over CBSA (Commercial Building Stock Assessment)	Estimated Savings over OEESC 2010/2014 (Oregon Energy Efficiency Specialty Code)
2015	70%	66%	**40%**
2020	80%	77%	**60%**
2025	90%	89%	**80%**
2030	100% (Net Zero)	100%	**100%**

Minimum requirements

- Set an EUI target that aligns with the 2030 Challenge targets
- Submit Construction Documents to Energy Trust for review
- Projects are also required to perform functional testing



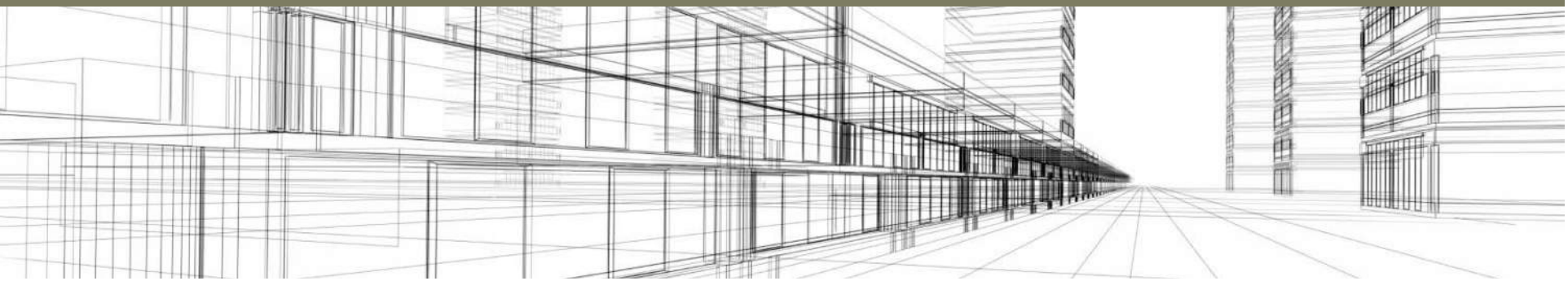
It all adds up to zero

- Increased incentives for early design, technical assistance, installation and post-occupancy
- Technical resources and assistance from kick-off through occupancy
- Incentives for net-zero certification

EnergyTrust of Oregon

Path to Net Zero incentives

- Early design
- Solar feasibility studies
- Technical assistance
- Installation & equipment
- Commissioning design review & functional testing
- Energy metering
- IFLI certification



SAIF and the Path to Net Zero

Brian Goldcrump, PE, LEED AP
Regional Energy Director
August 7, 2018

Energy Use Intensity (EUI)

$$EUI = \frac{\text{Annual Building Energy Use (kBtus or MJ)}}{\text{Building Area (ft}^2\text{ or m}^2\text{)}}$$

Average EUI's for Different Building Types

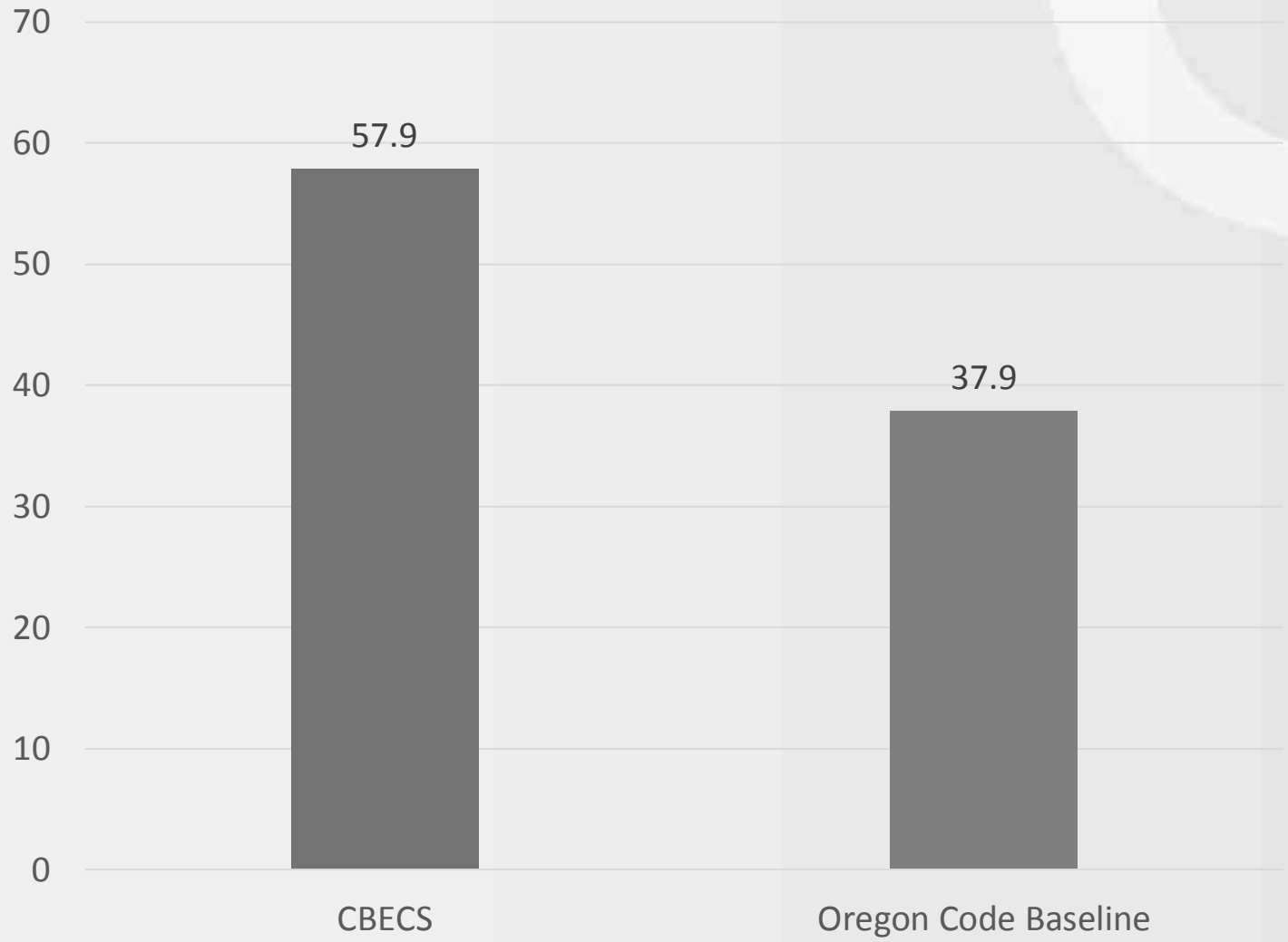
K-12 School - 58

Office - 57

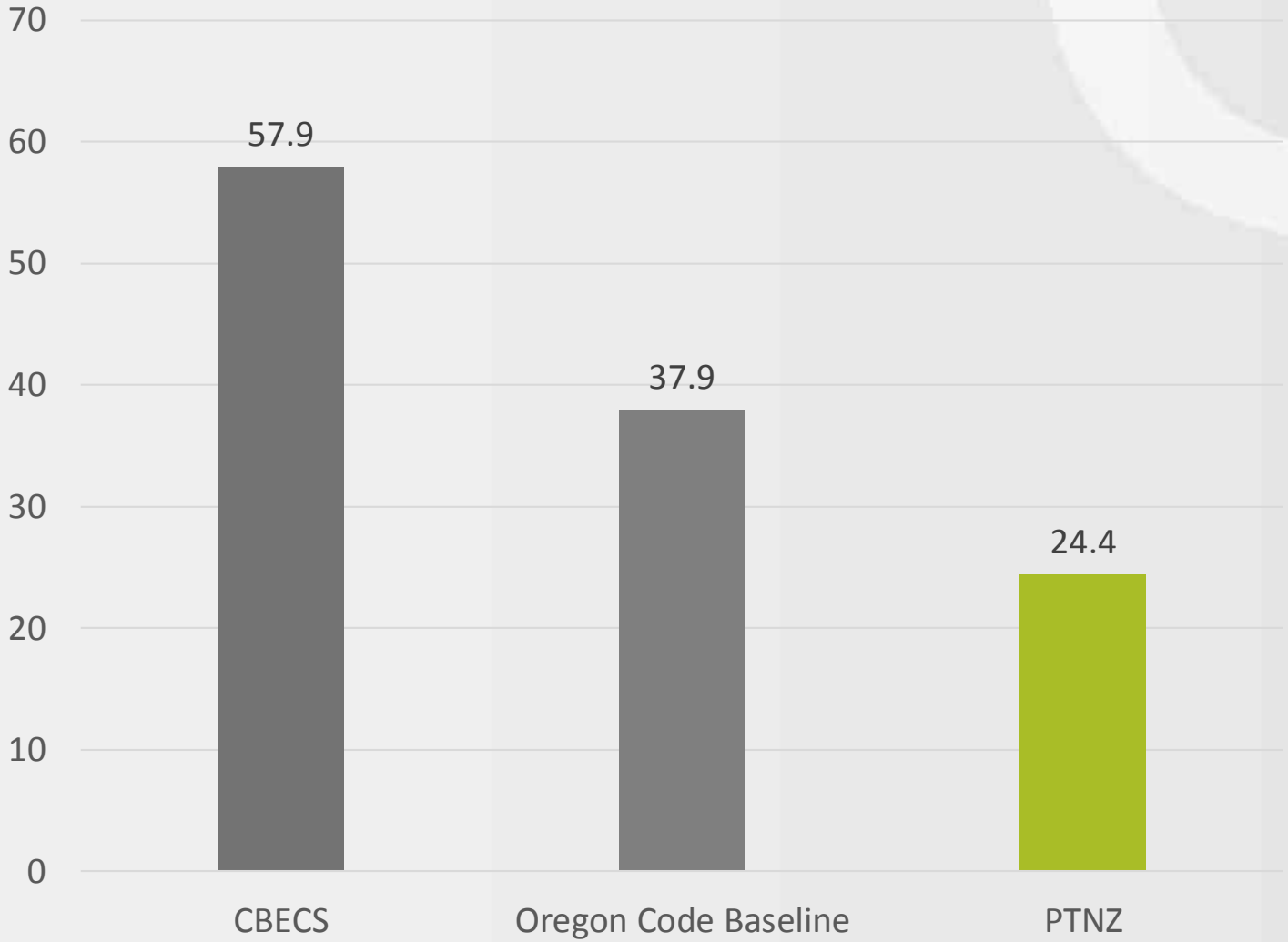
Grocery - 186

Hospital - 198

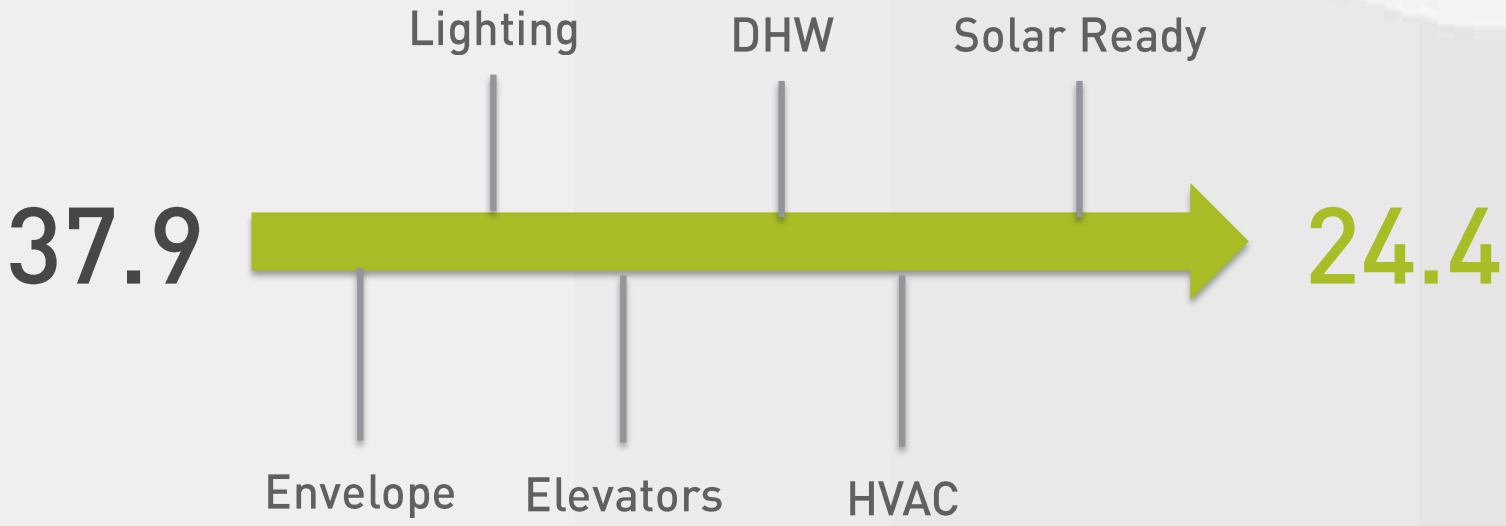
Benchmarking – CBECS vs Oregon Energy Code



Benchmarking – PTNZ

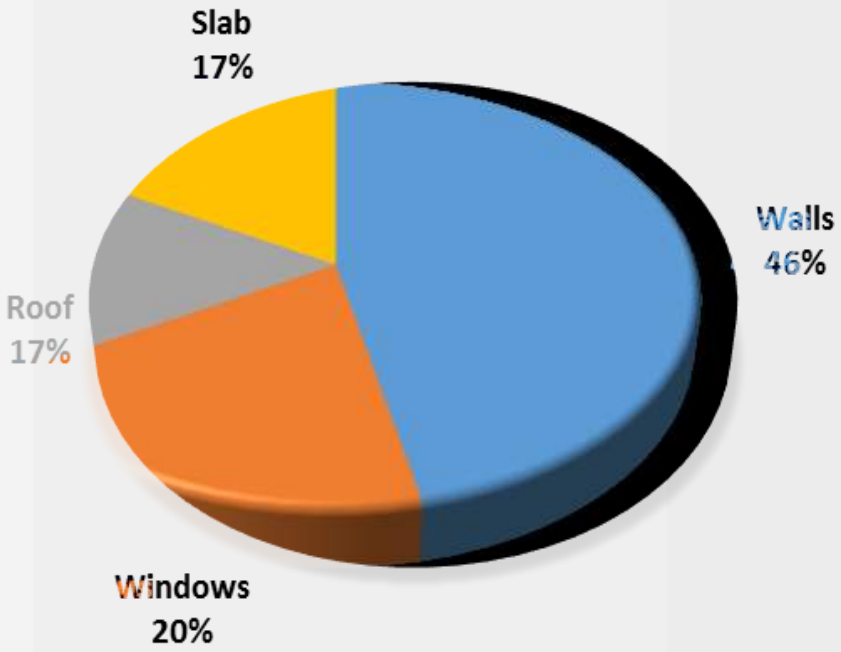


The Path to Net Zero

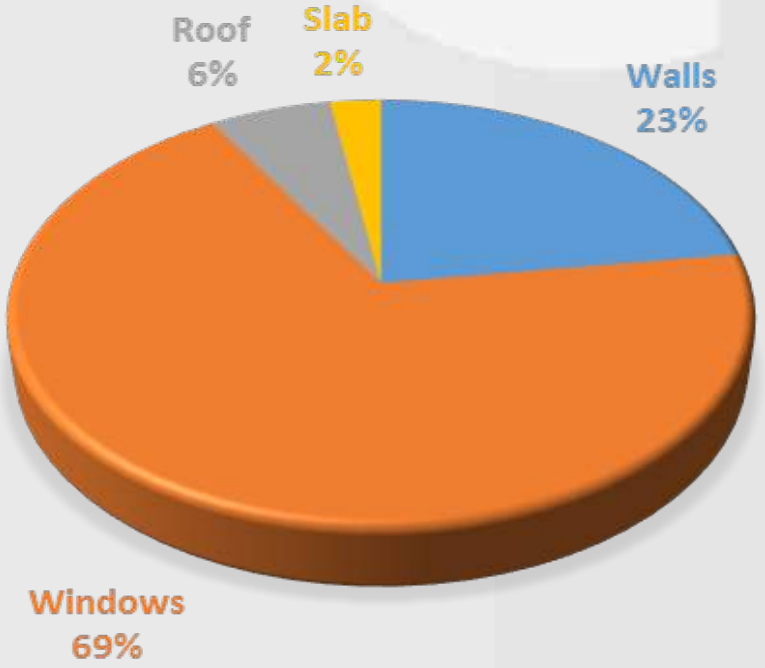


Envelope

Building Envelope by Area



Building Envelope by Heat Loss

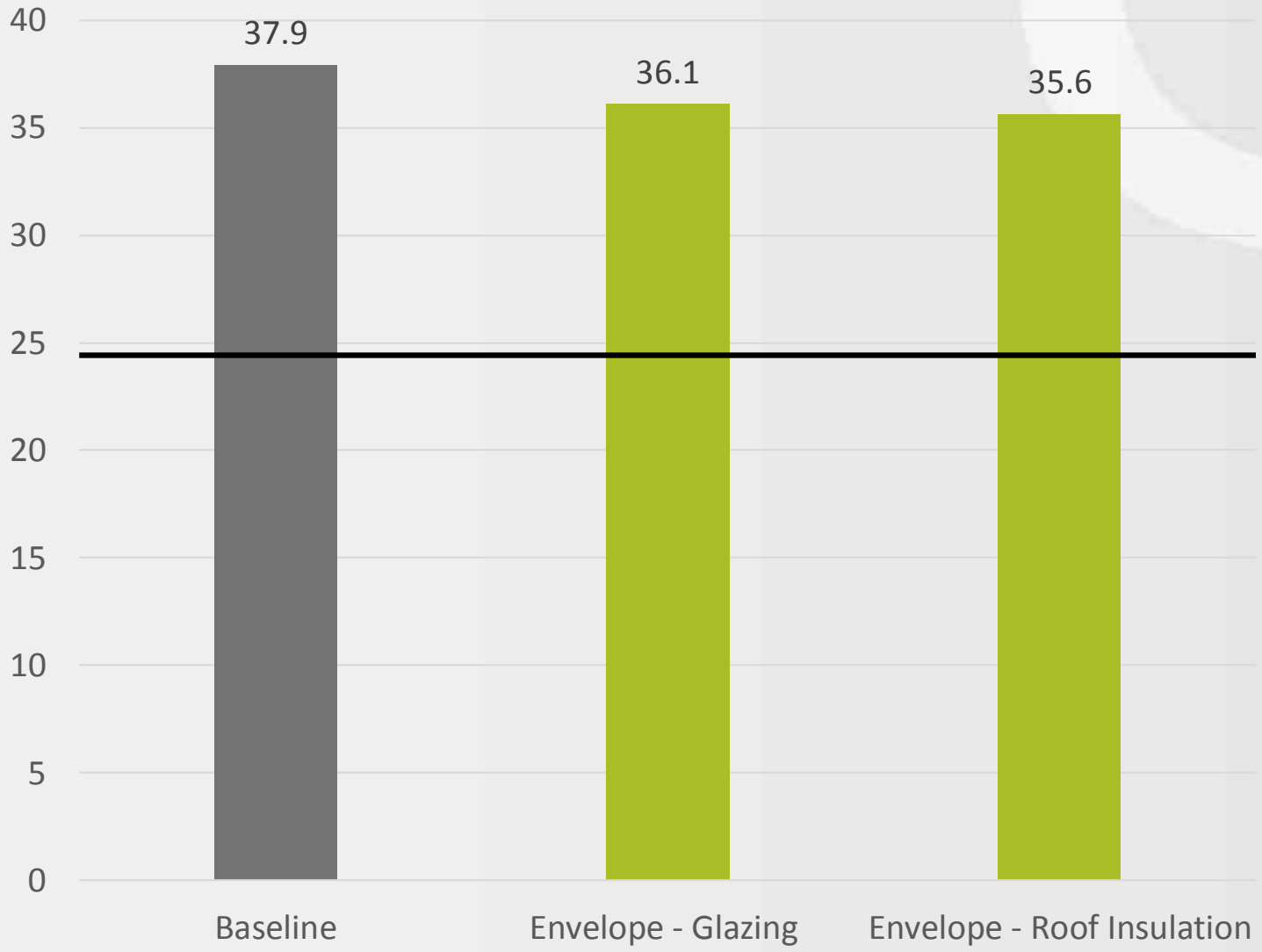


Envelope

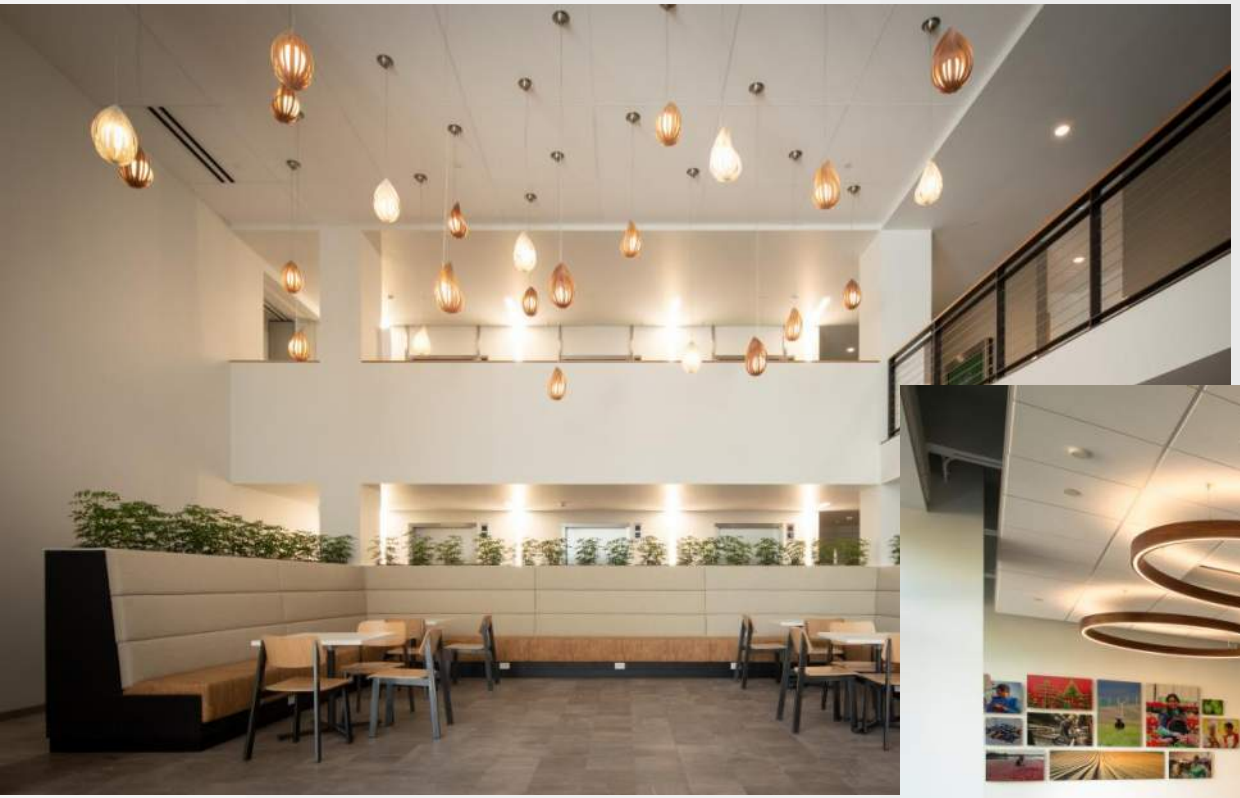
Curtain Wall w/ Argon Fill
U-0.38/SHGC-0.33

Fiberglass Frames w/ Argon Fill
U-0.25/SHGC-0.3

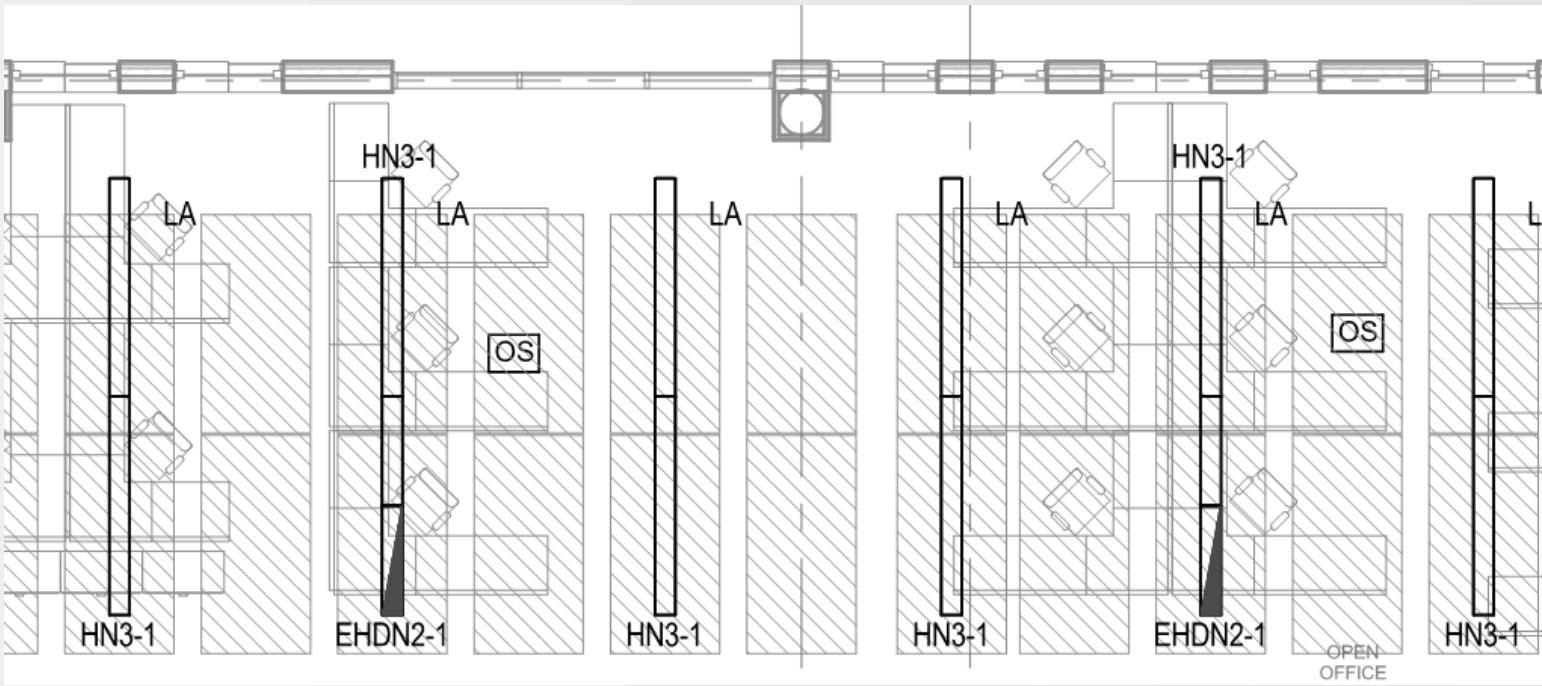
PTNZ – Envelope



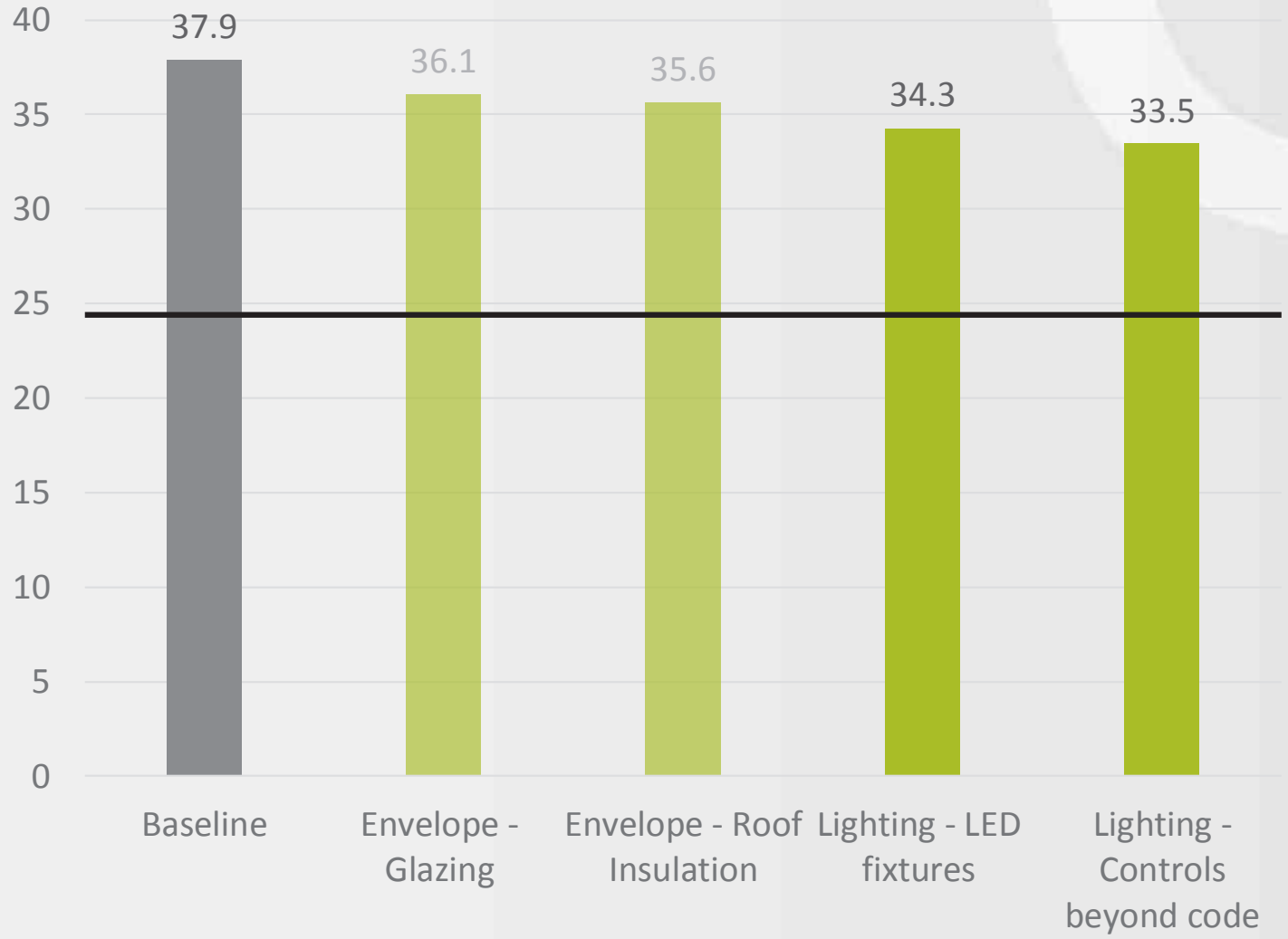
Lighting – LED



Lighting – Controls

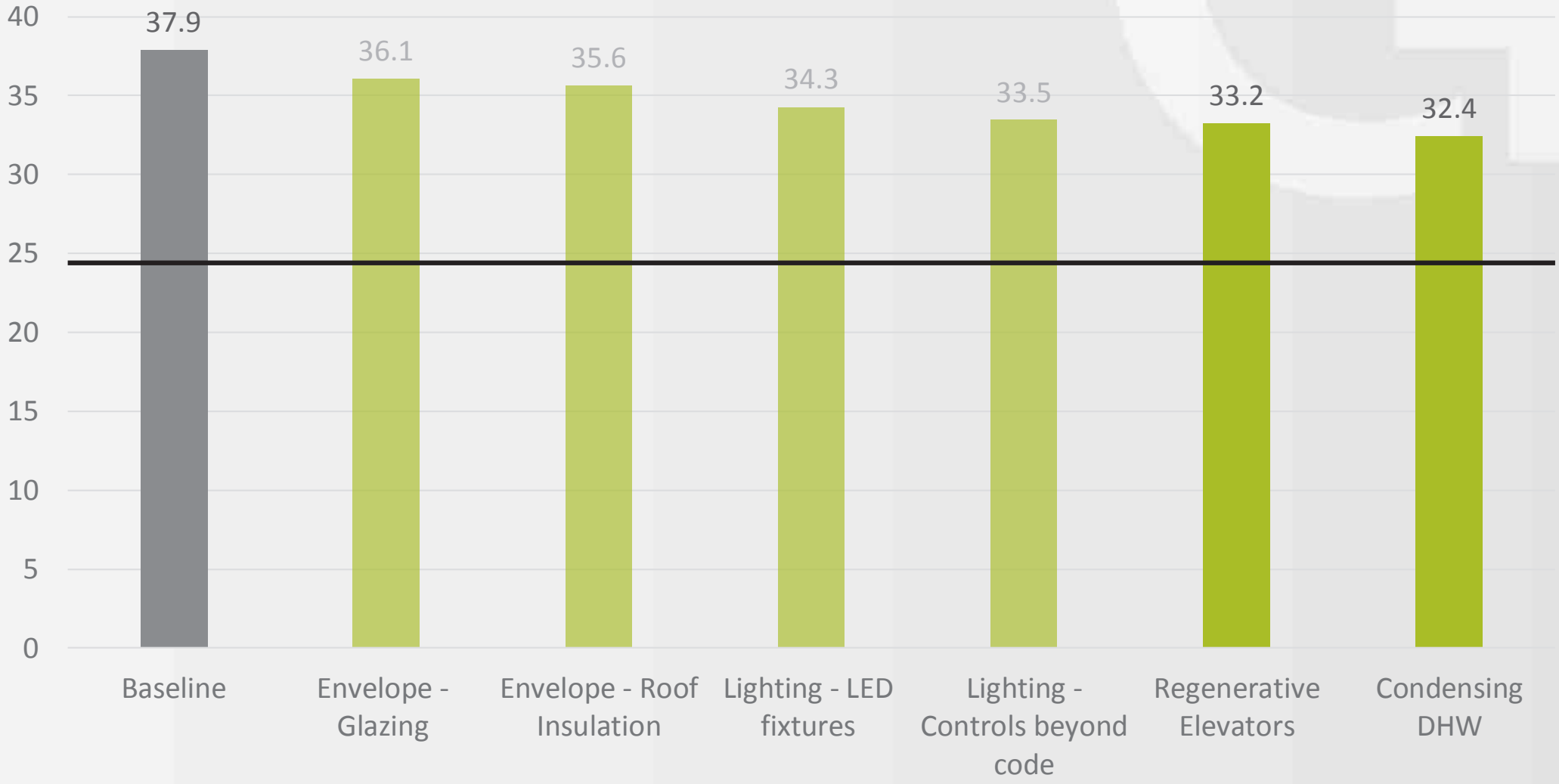


PTNZ – Lighting



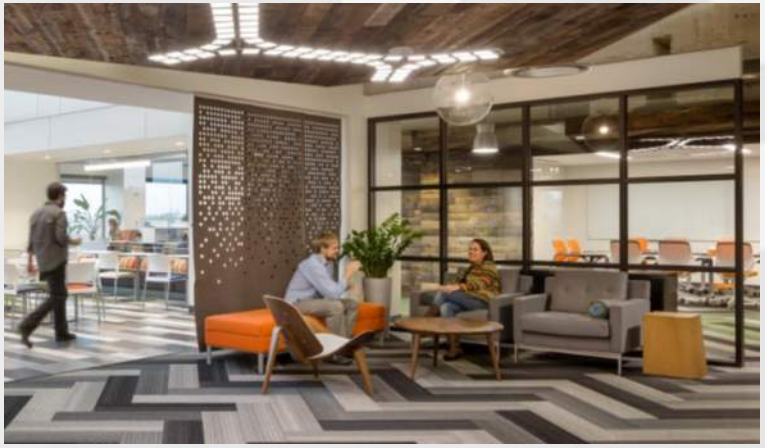
Elevators and DHW

PTNZ – Elevators and DHW



HVAC Goals

EnergyTrust of Oregon

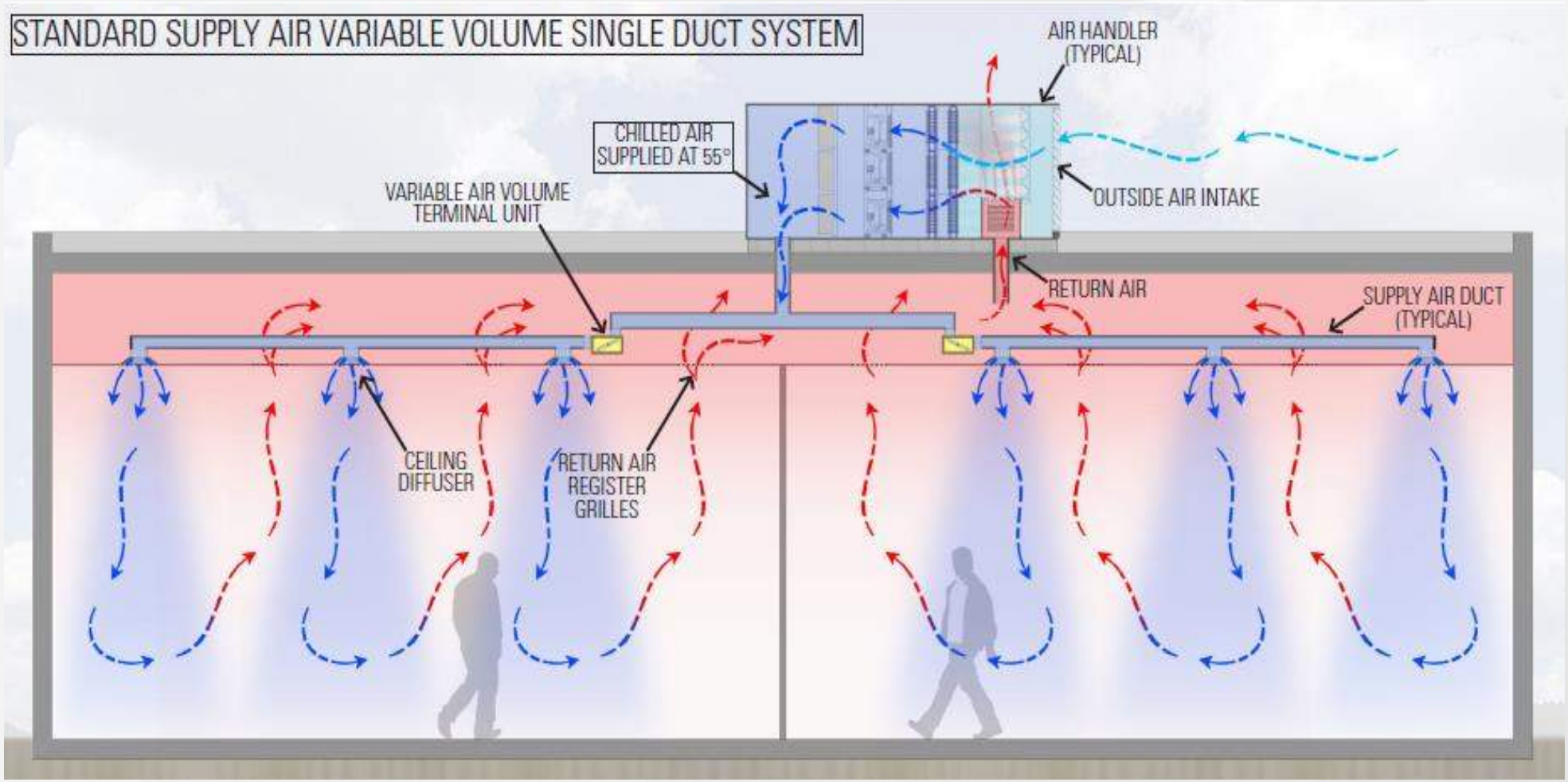


Comfort

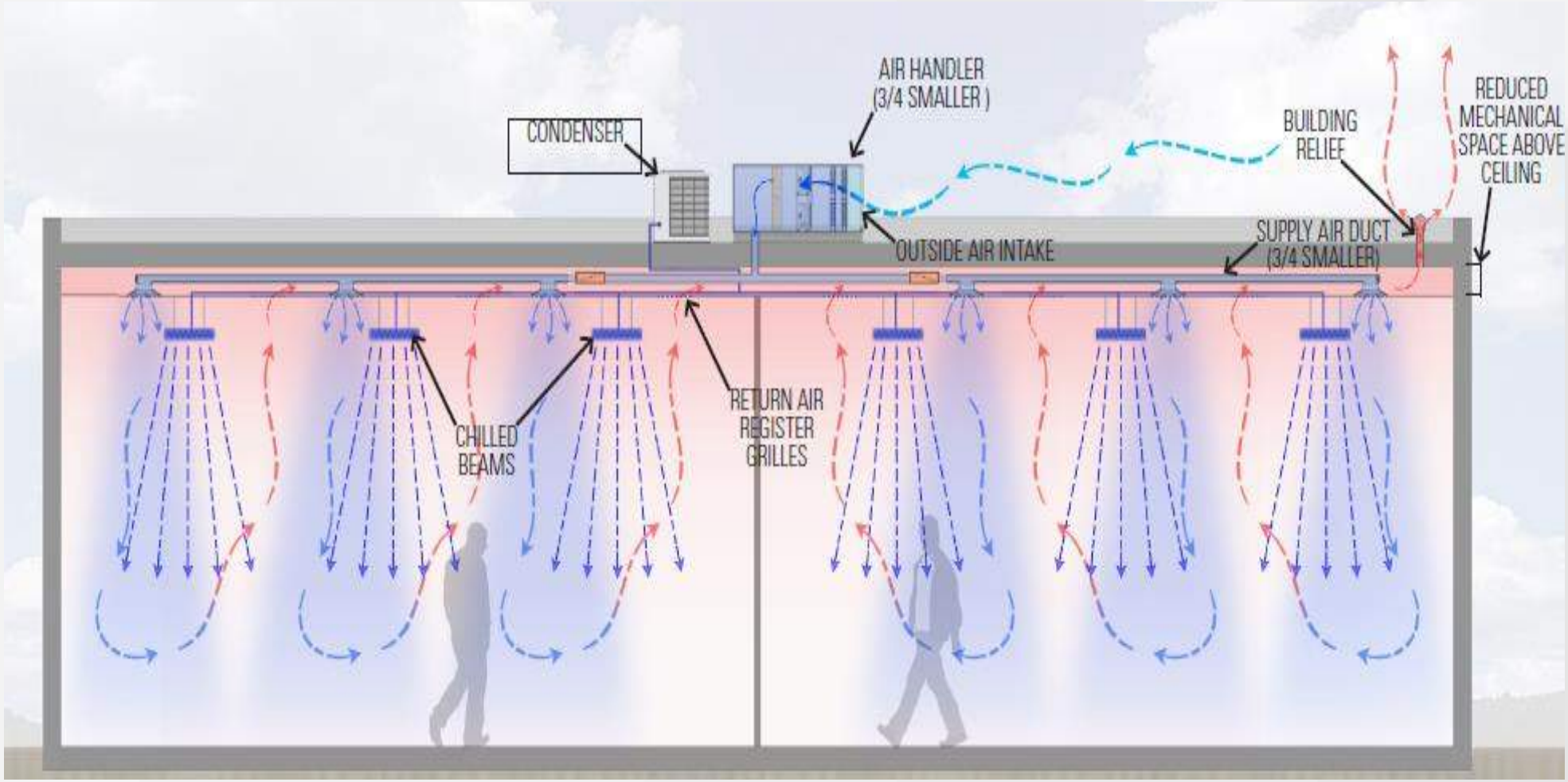
Space Functionality

Aesthetically Pleasing

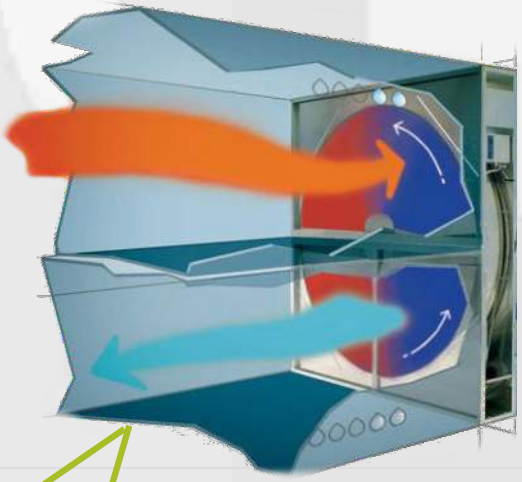
HVAC System – Existing/Conventional

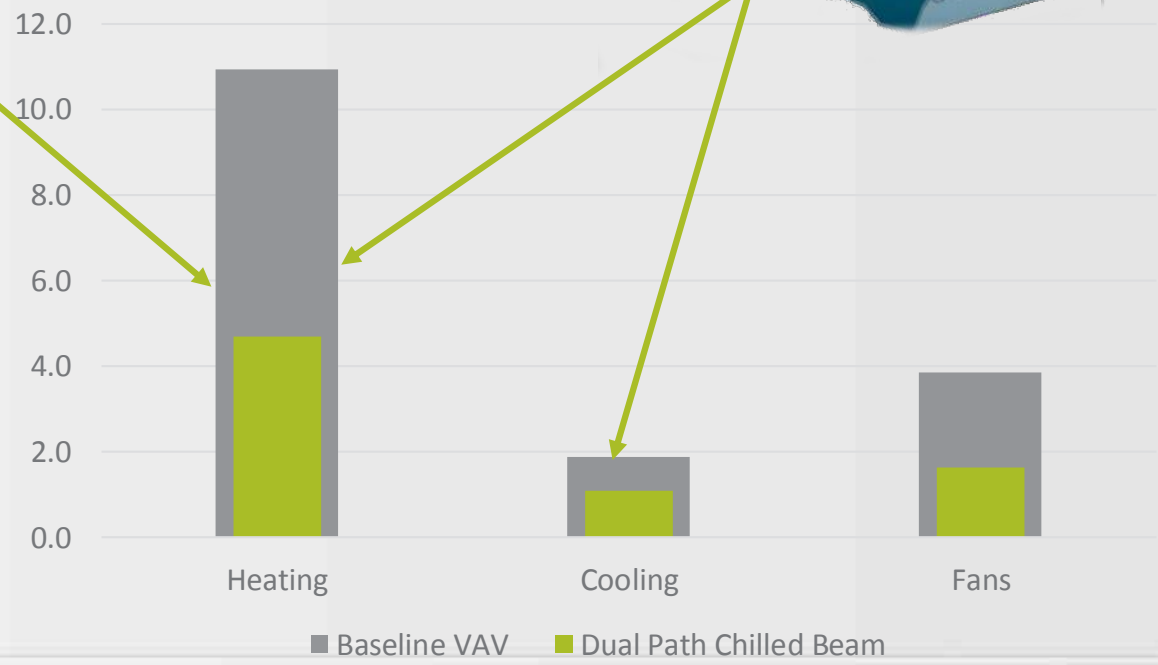


HVAC System – Dual Path

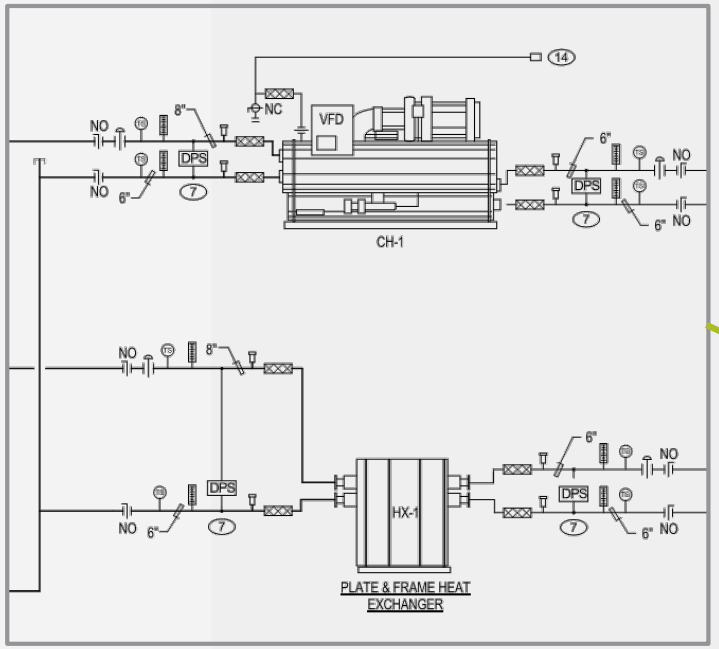


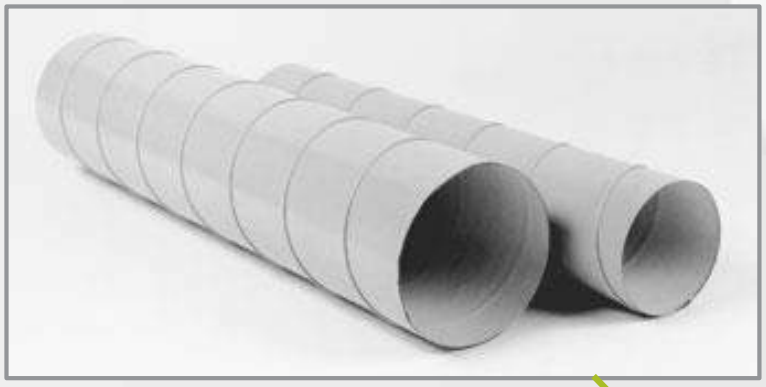
HVAC System – Dual Path Benefits: Energy Efficiency

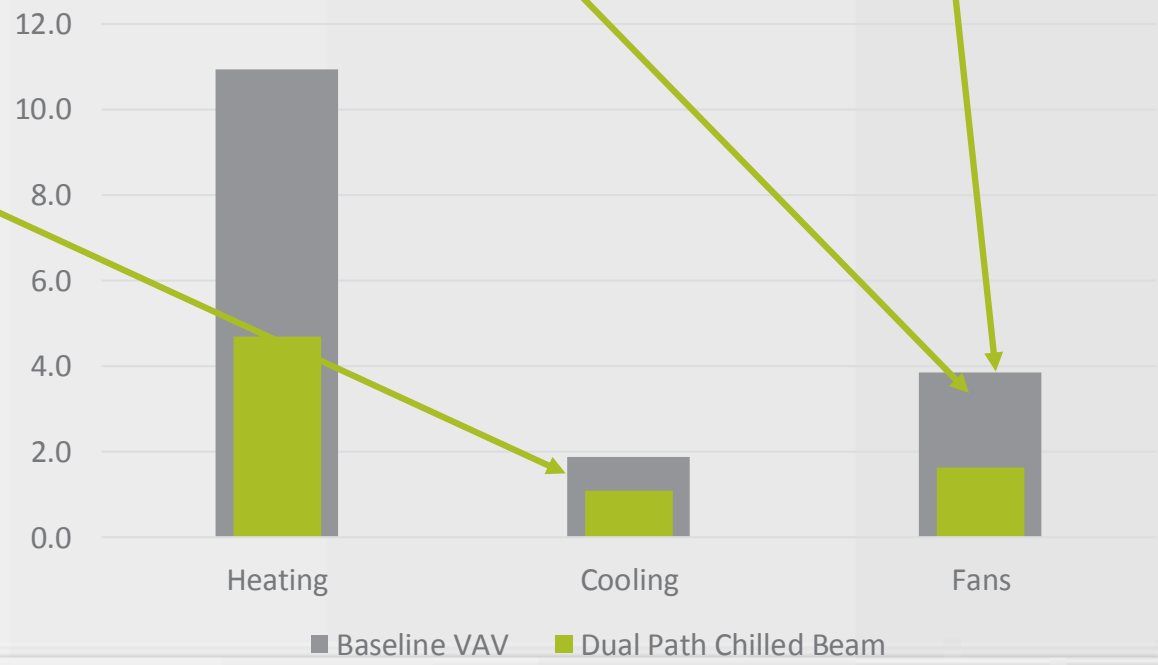




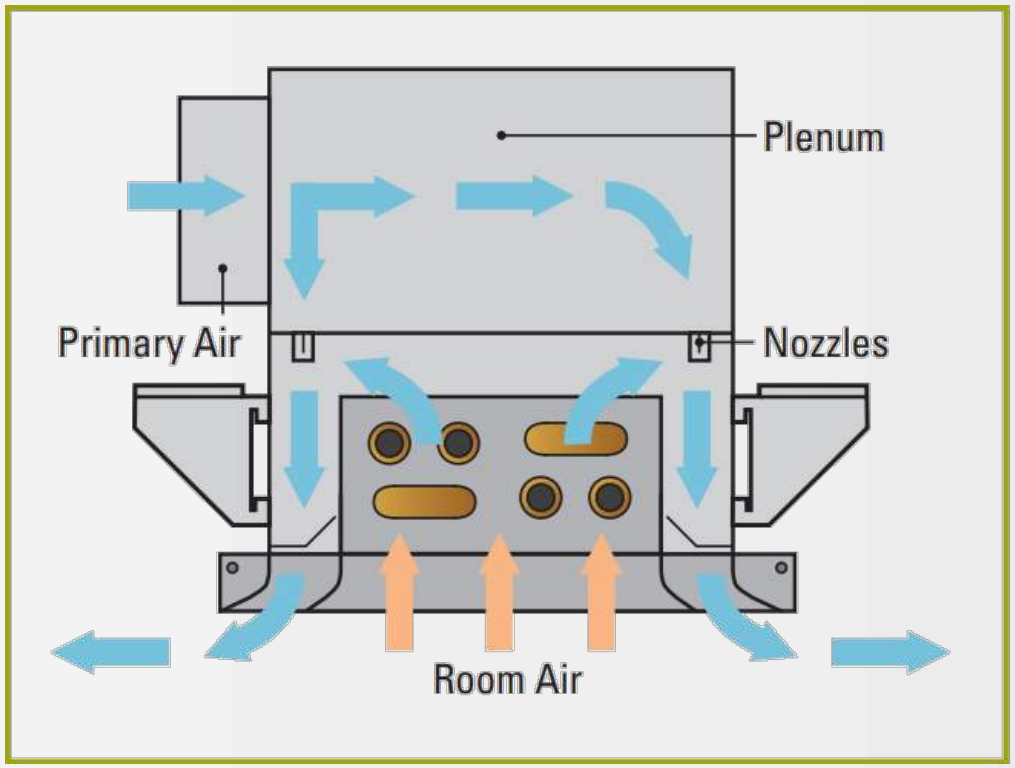
HVAC System – Dual Path Benefits: Energy Efficiency

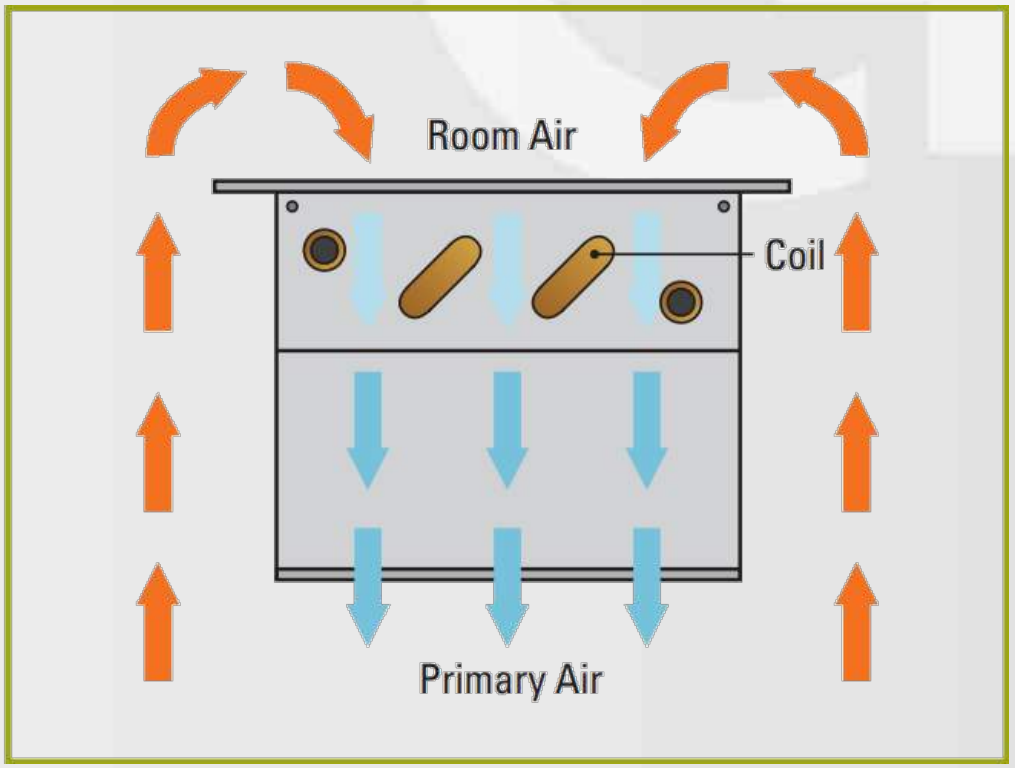






HVAC System – Dual Path Benefits: Comfort

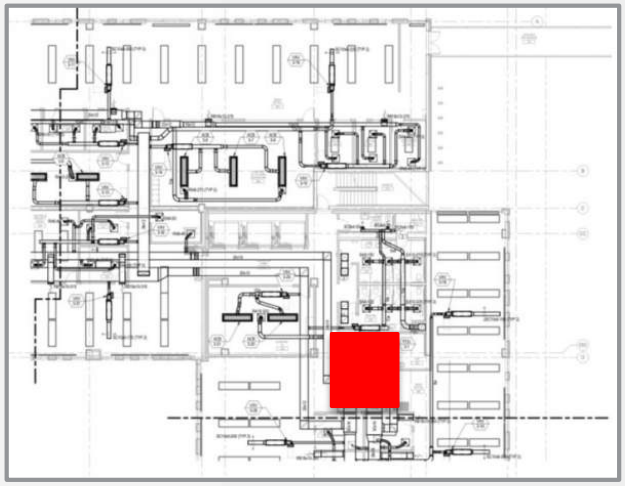




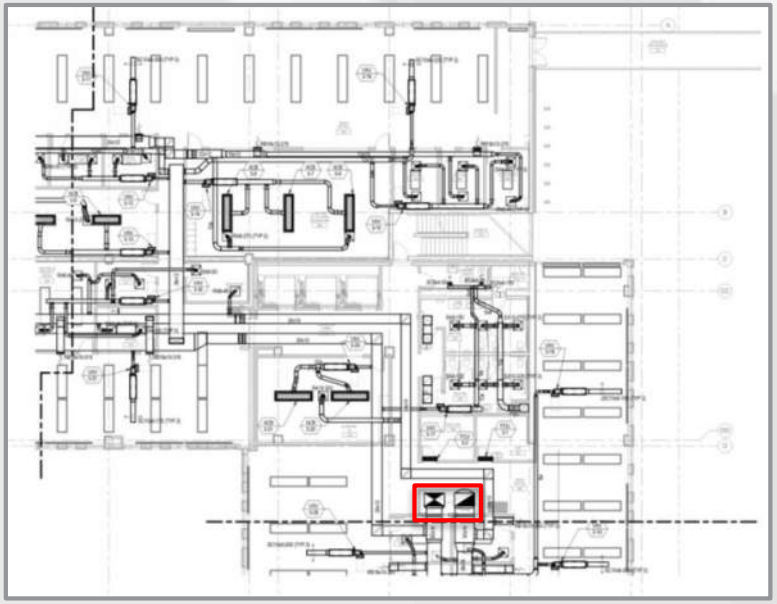
Reduced drafts

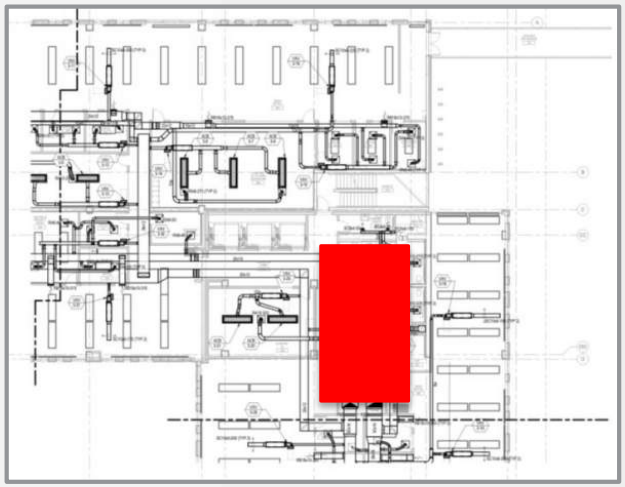
Reduced noise

HVAC System – Dual Path Benefits: Floor Space Efficiency



Rooftop VAV:
Medium shaft space
High fan power

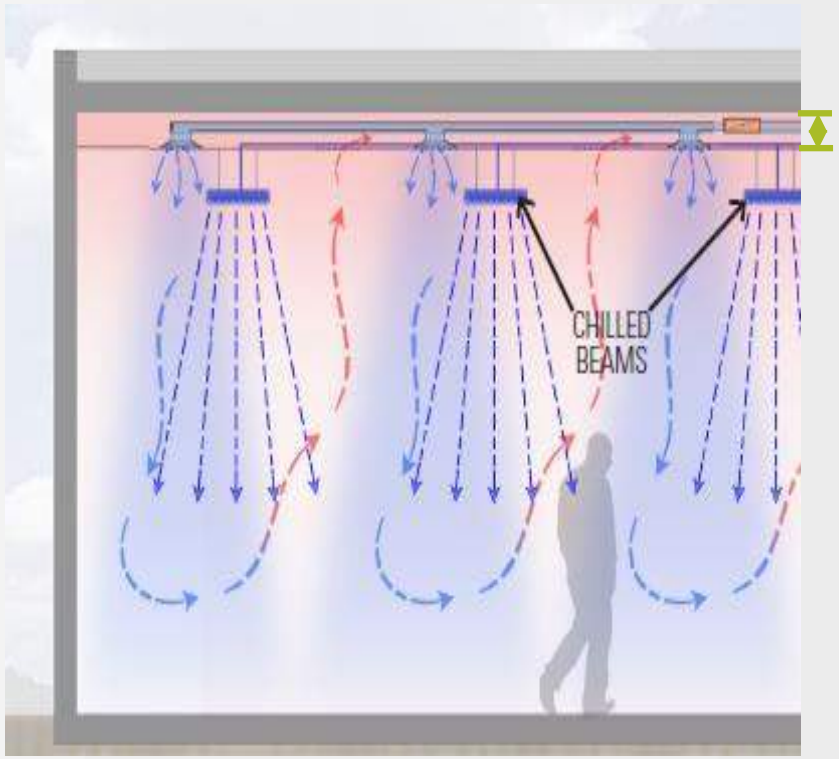


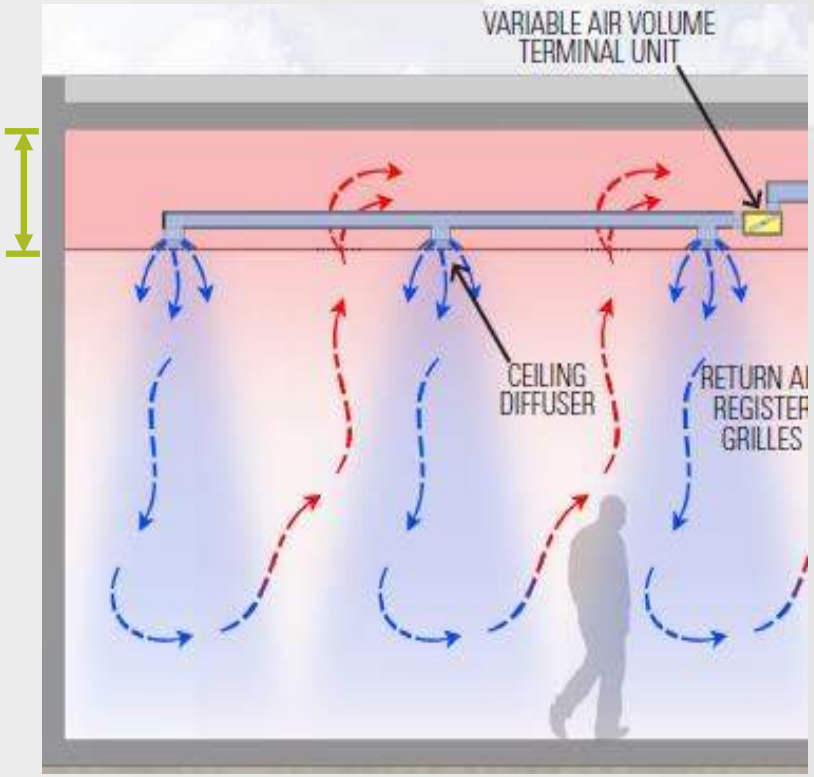


Floor-by-Floor VAV:
Large Mechanical Rooms
Medium fan power

Dual Path:
No mechanical rooms
Small shaft space
Low fan power

HVAC System – Dual Path Benefits: Ceiling Space Efficiency



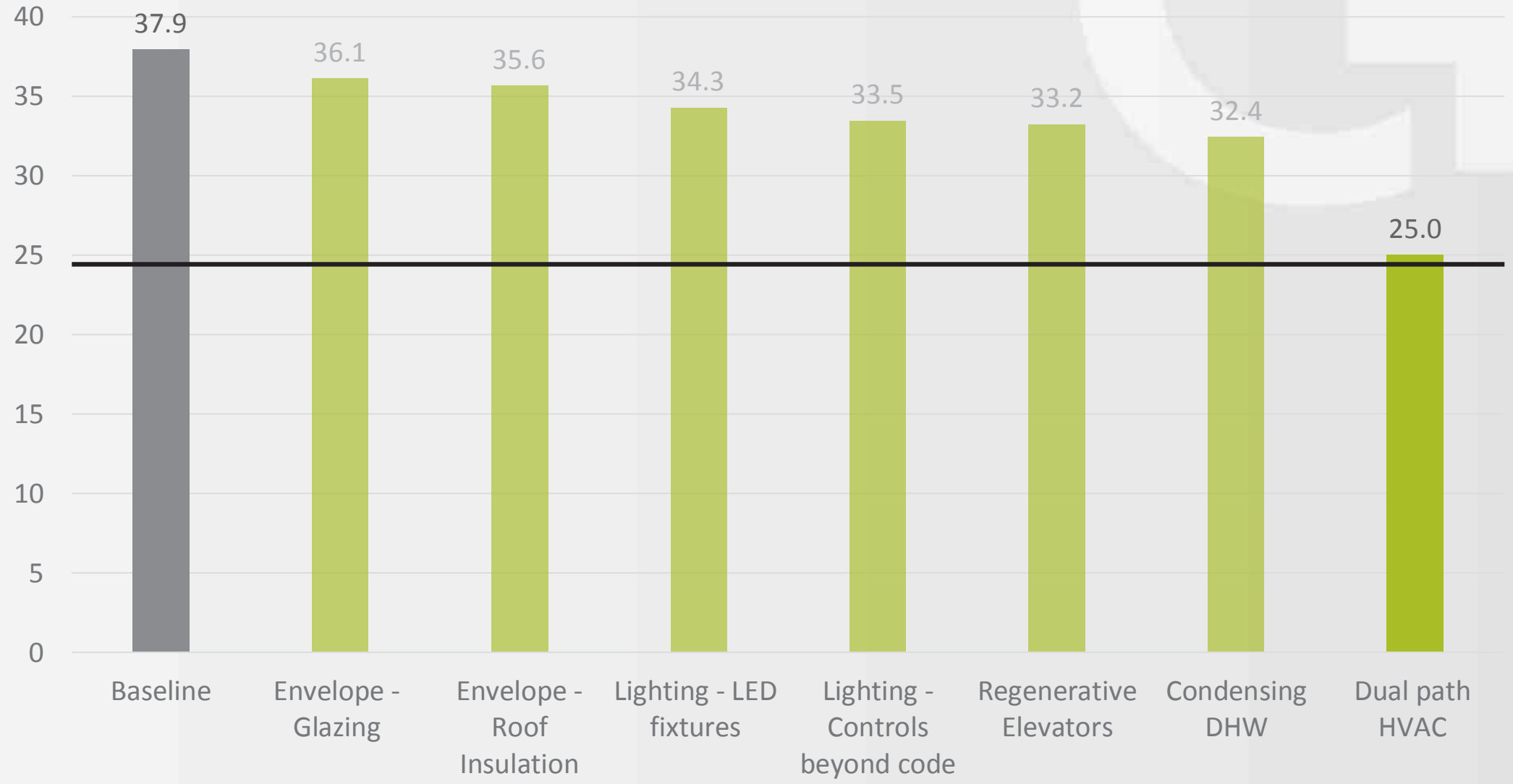


HVAC System – Dual Path Benefits: Aesthetics

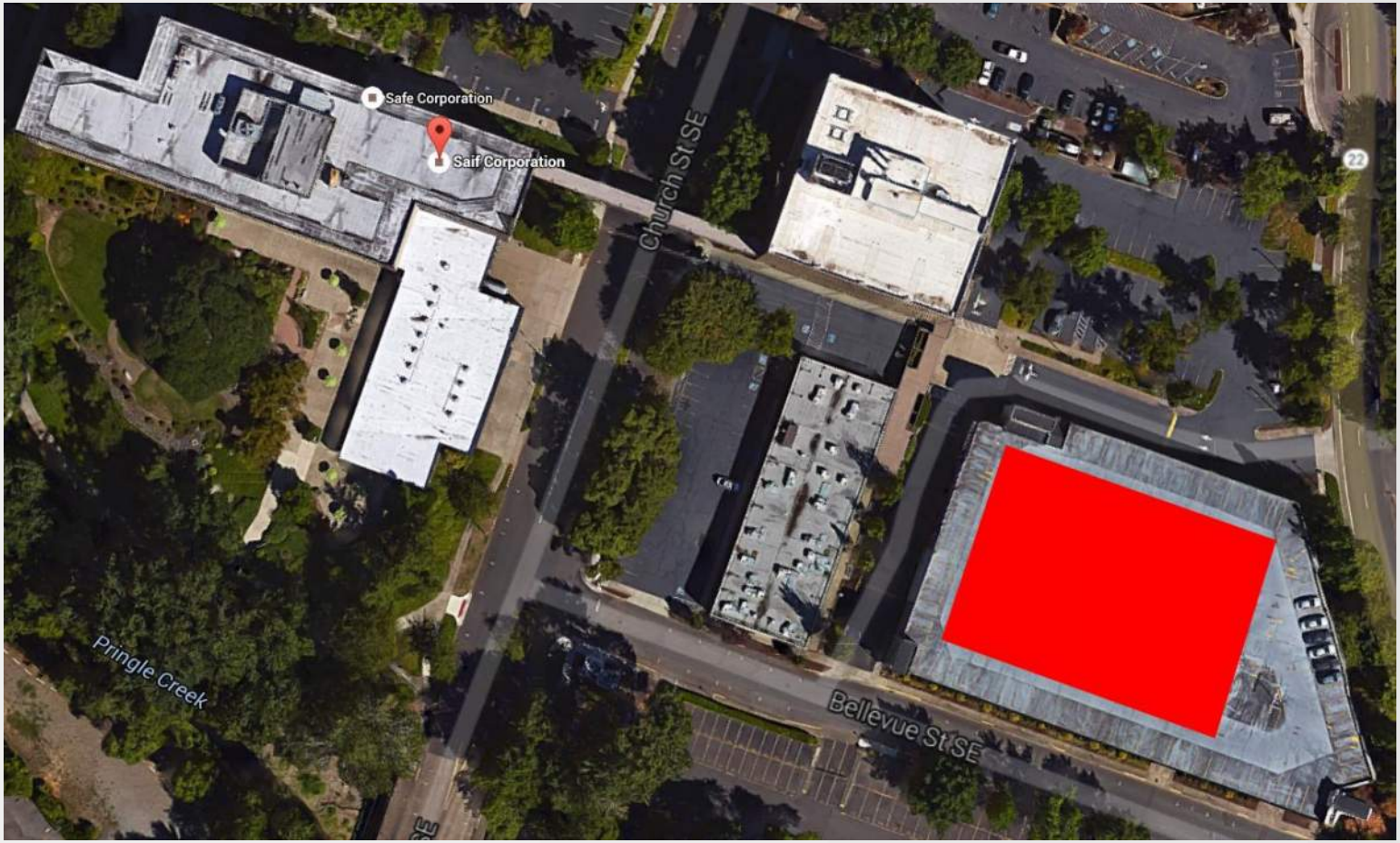
Typical Office (VAV)

SAIF (Chilled Beam)

PTNZ – HVAC

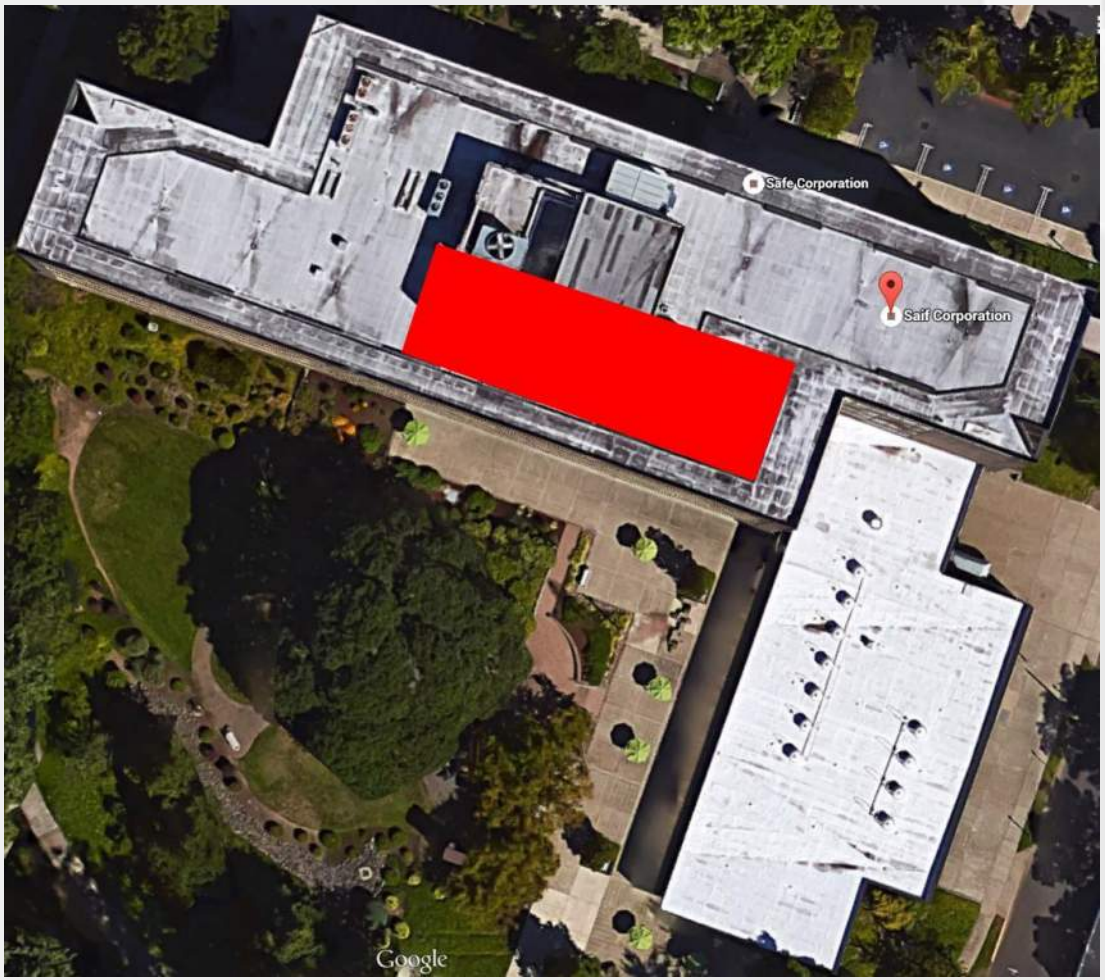

40
35
30
25
20
15
10
5
0
37.9
36.1
35.6
34.3
33.5
33.2
32.4
25.0
Baseline
Envelope - Glazing
Envelope - Roof Insulation
Lighting - LED fixtures
Lighting - Controls beyond code
Regenerative Elevators
Condensing DHW
Dual path HVAC

Solar Photovoltaic (PV) – Early Concepts



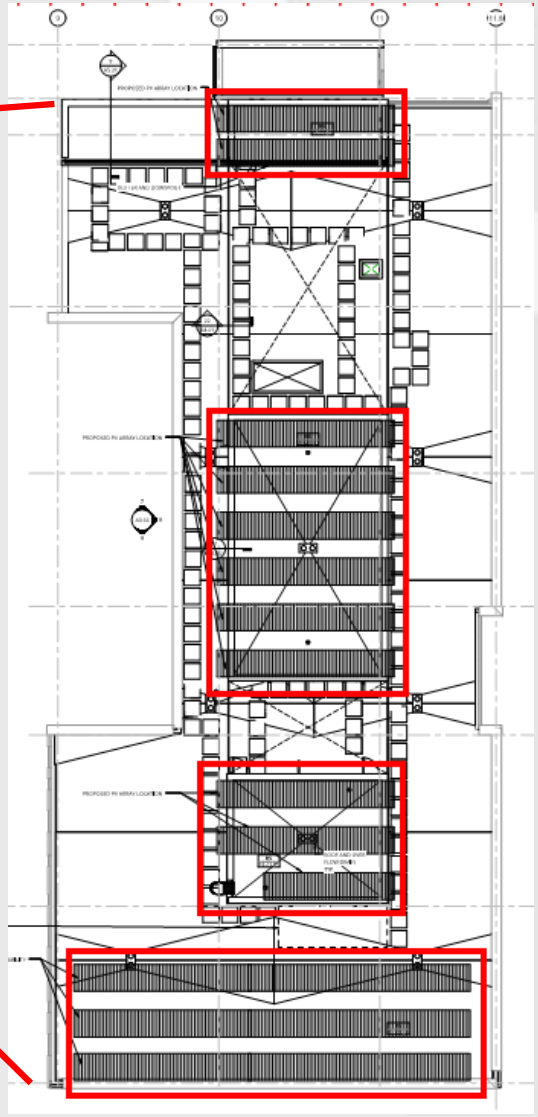
20,000 sqft = 440 kW
450,000 kWh/yr = 8 EUI

Solar Photovoltaic (PV) – Early Concepts



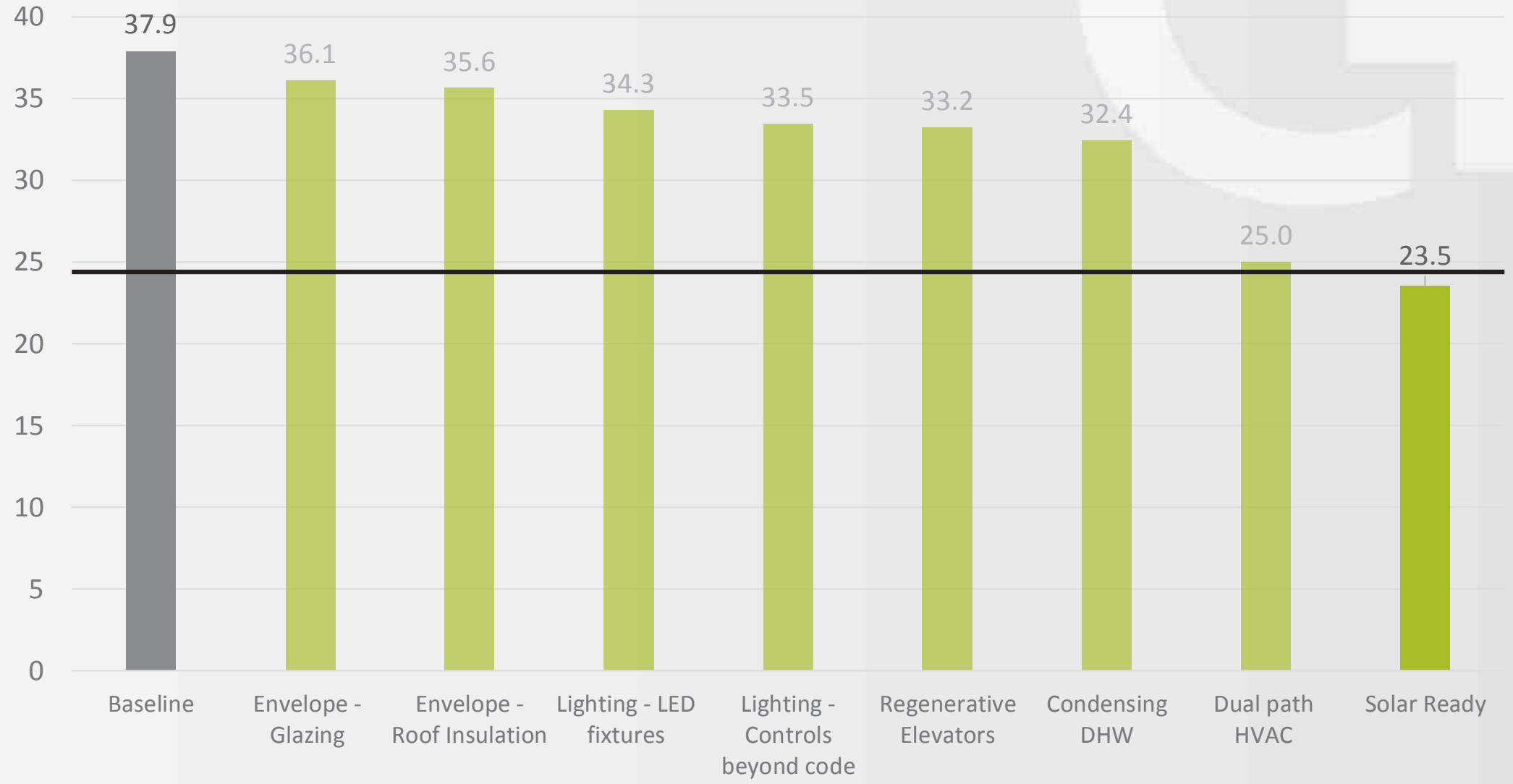
15,00 sqft = 330 kW
450,000 kWh/yr = 6 EUI

Solar Photovoltaic (PV) – Solar Ready



64 kW
142,000 kWh/yr = 1.5 EUI

PTNZ – Solar Ready



Installation Incentives

EEM	Description	Annual Savings	Incremental Cost	Incentive	Payback Before Incentive	Payback w/ Incentive
1	Envelope - Glazing	$3,745	$19,684	$6,555	5.3	3.5
2	Envelope - Roof Insulation	$979	$59,255	$0	60.5	60.5
3	Lighting - LED fixtures	$7,892	$54,807	$37,174	6.9	2.2
4	Lighting - Controls beyond code	$4,542	$43,967	$20,880	9.7	5.1
5	Regenerative Elevators	$1,059	$10,000	$4,420	9.4	5.3
6	Condensing DHW	$548	$4,436	$625	8.1	7.0
7	Dual path HVAC	$22,458	$177,893	$67,758	7.9	4.9
	Prescriptive - Kitchen Equipment	$1,048		$2,500		
	Total	**$139,912**				

Total Incentives

Final Incentives:

- Early Design Assistance: **$10,000**
- Technical Assistance: **$50,000**
- Commissioning Design Review: **$15,000**
- Solar Ready: **$16,700**
- Installation: **$140,000**

Total: $231,700

CHA-CHING!!!

Ankrom Moisan