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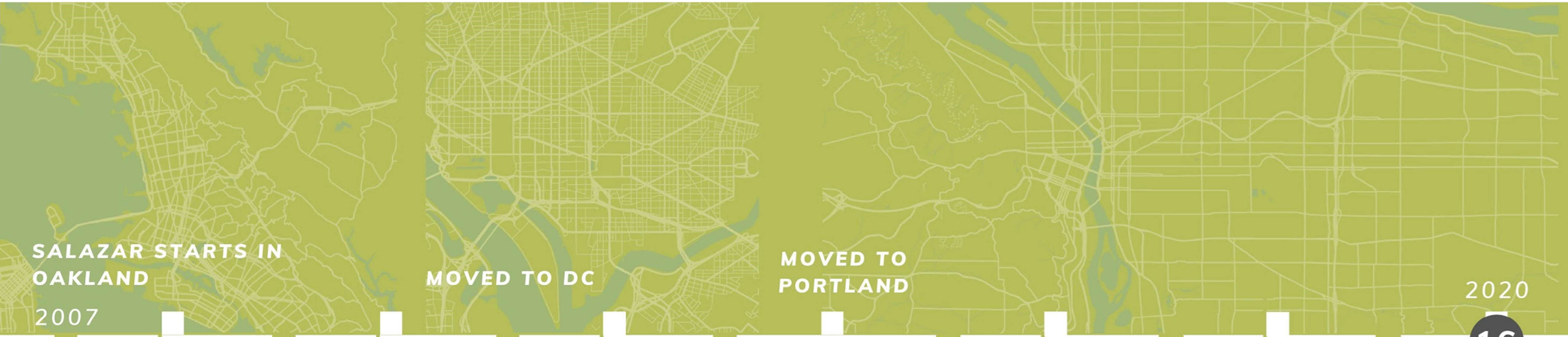
April 23, 2020

Salazar Architect Inc.

Discovering a Prototypical Sustainable Design Process

Energy Trust of Oregon Net-Zero Emerging Leader: Emily Waldinger

Salazar Architect Inc. *creates high-impact* ***public interest architecture*** *through thoughtful client, resident and* ***community involvement****, innovative design and creative interiors.* ***Environmental stewardship****,* ***economic stability*** *and* ***social empowerment*** *are integrated concepts and by being responsive to these needs we design unique, meaningful places that are* ***rich in architectural character and affordable to build.***


SALAZAR STARTS IN OAKLAND
2007
MOVED TO DC
MOVED TO PORTLAND
2020
Wood Street
Fox Courts
Oak to 9th
Fruitvale Gateway
Kenneth Henry Courts
Yosemite Village
Zygmunt Arendt
CHP Headquarters
Keller Plaza
Highland 24
Westlake Terrace
Liberty Garden Apartments
Vibrant!
Kateri Park
Right 2 Root
Cascadian Terrace
Dos Rios Station
Heirloom
Mutual on the Blvd
Williams Plaza
PSU RBD
Fourth Plain
Mutual on 46th
Small Homes NW
Dahlke Manor
Fountain Place
AIA 2030 COMMITMENT
ETO NZEL
1
FIRM SIZE
3
2
4
11
16

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Firm Structure

Salazar Architect's staff are organized in three Design Labs, spending 10% of their time on activities that advance our firm's community-based mission.

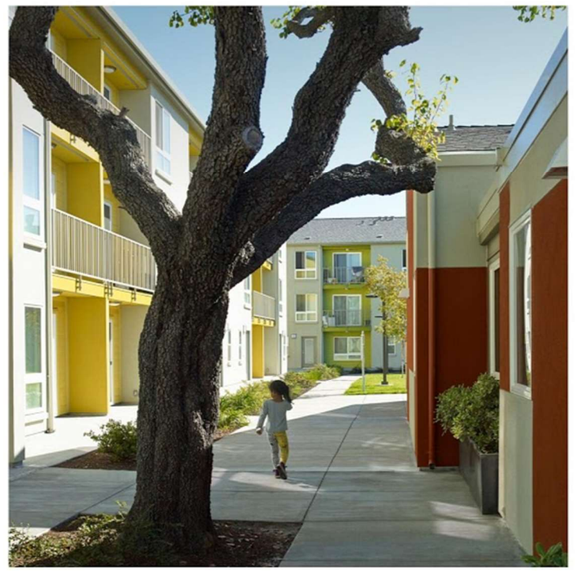
- Design reviews of ongoing work
- Conferences / Trainings
- Invited Speakers
- Pro-Bono work (One+)

We coordinate the Design Labs and project staffing so that knowledge is holistically integrated into the design work that we do.

- Alex Salazar - Community Design Lab
- Jennifer Nye - Well-being Design Lab
- Matt Bokar - Sustainable Design Lab

COMMUNITY DESIGN LAB

public interest • process not product • participatory • engaging • empowering • civil rights • equity

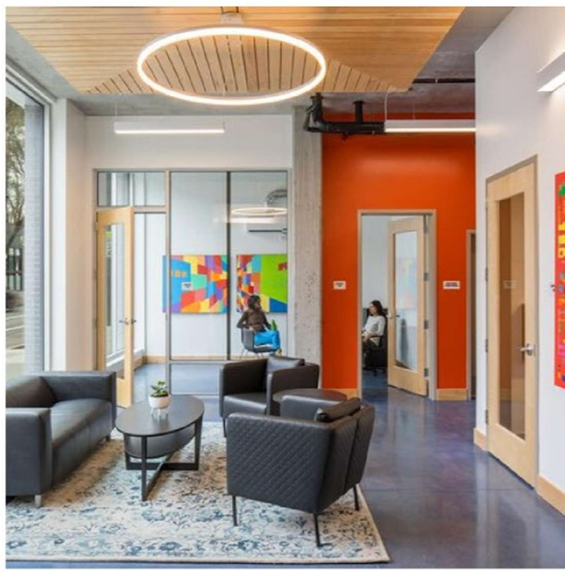


WELL-BEING DESIGN LAB

community health • trauma informed • wellness • natural systems • biophilic

SUSTAINABLE DESIGN LAB

energy modeling • minimized carbon footprint • environmentally sound materials • HVAC systems analysis • LEED • Earth Advantage



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Salazar Organizational Diagram

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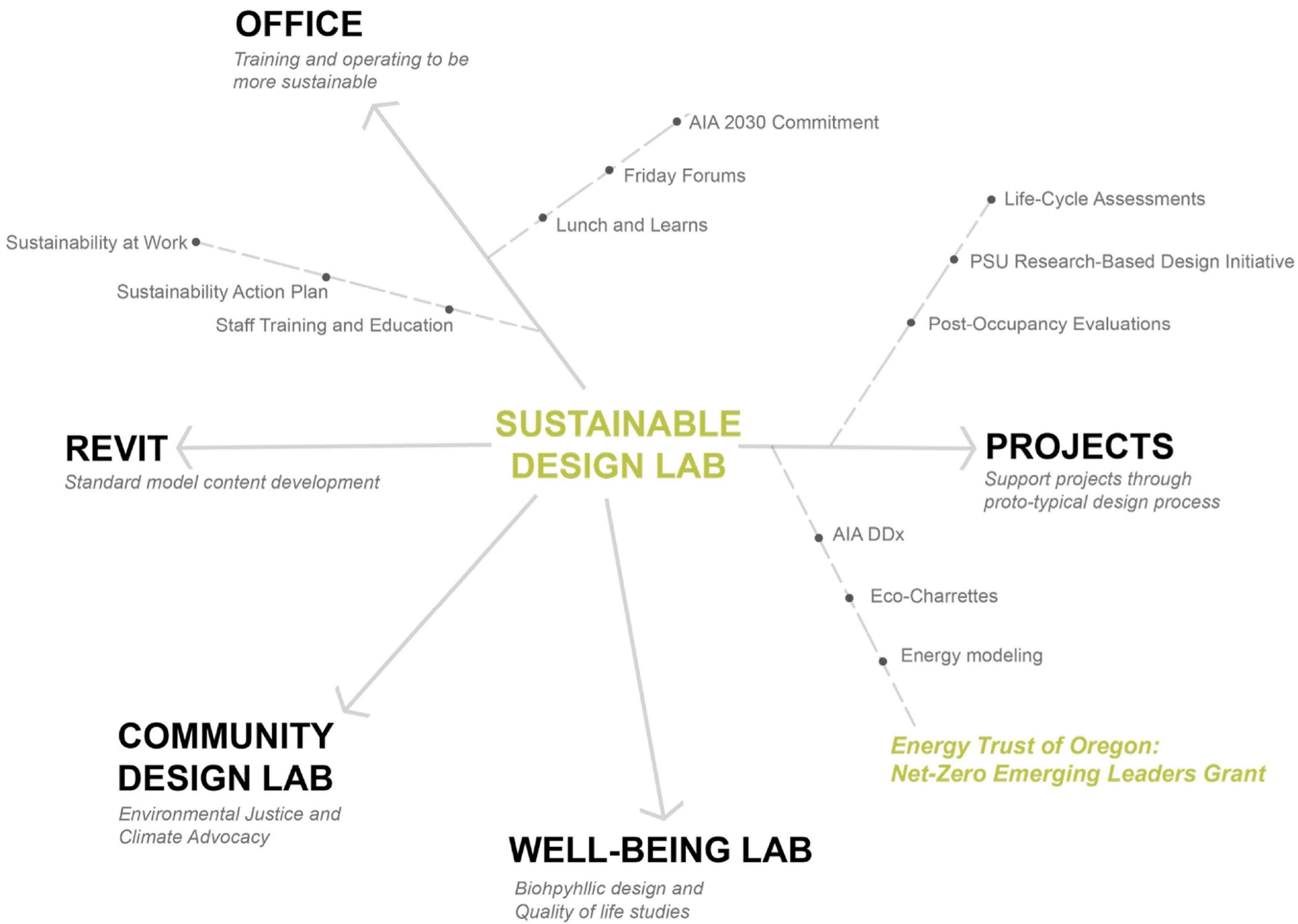
Sustainable Design Lab Organizational Diagram



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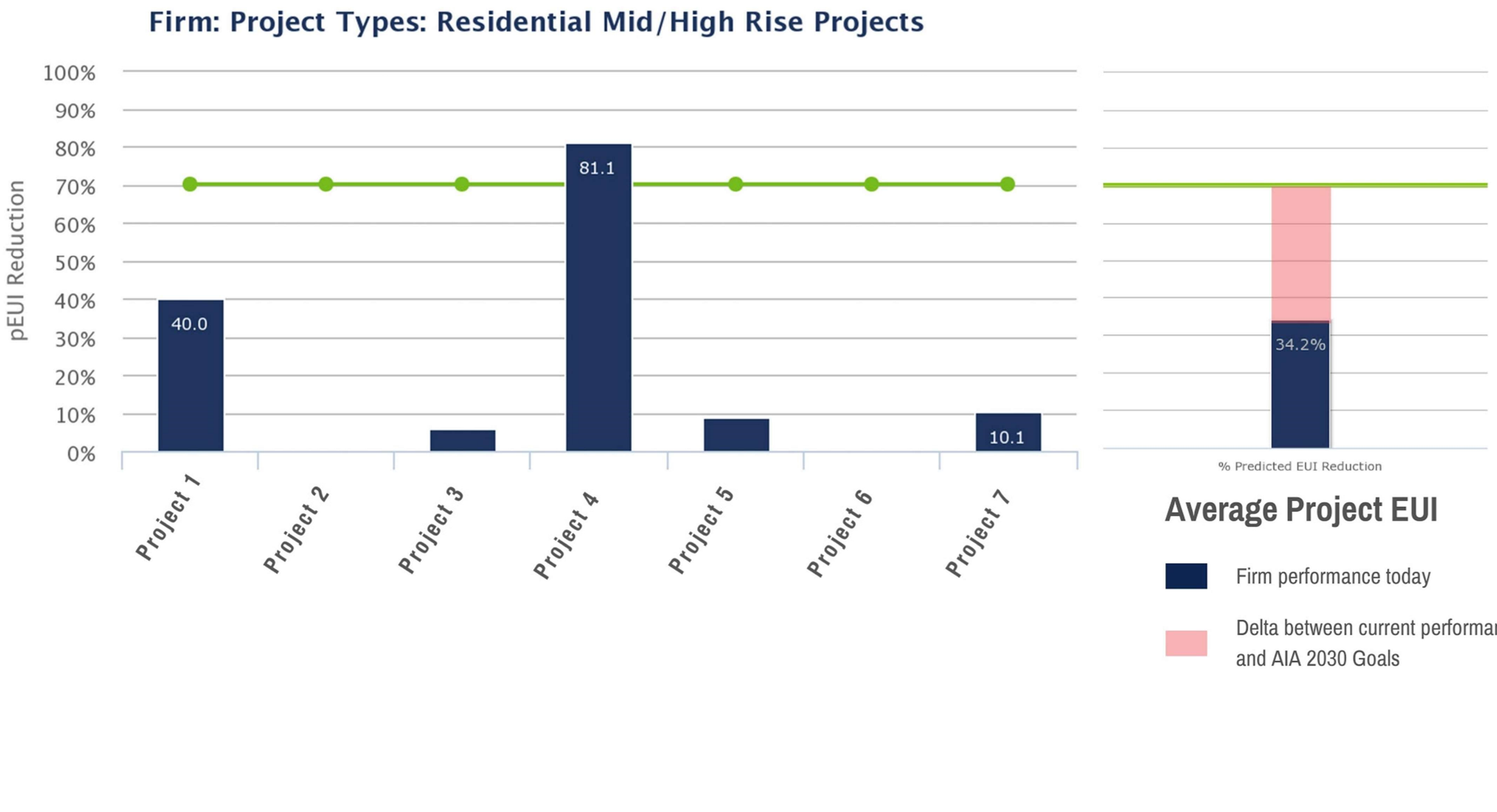
Energy Trust: Net-Zero Emerging Leaders Internship Scope

GETTING STARTED / FORMALIZING APPROACH

- AIA DDX
- ENERGY MODELING
- PROTO-TYPICAL DESIGN PROCESS

AIA 2030 CHALLENGE: GETTING STARTED / WHERE ARE WE NOW?



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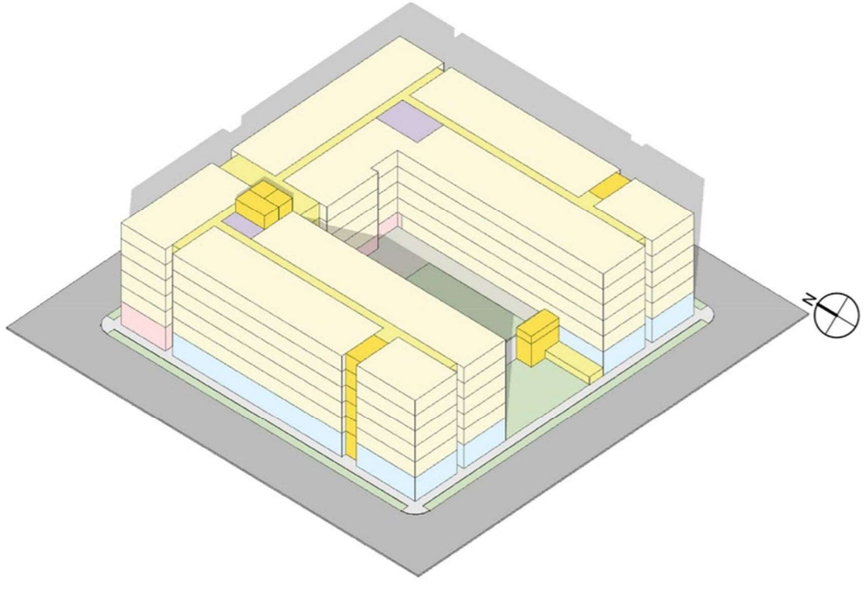
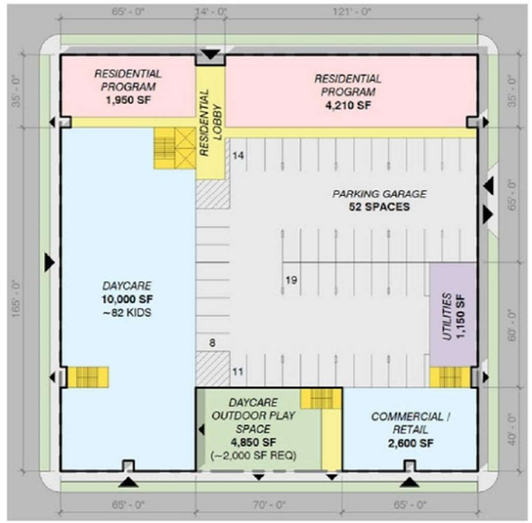
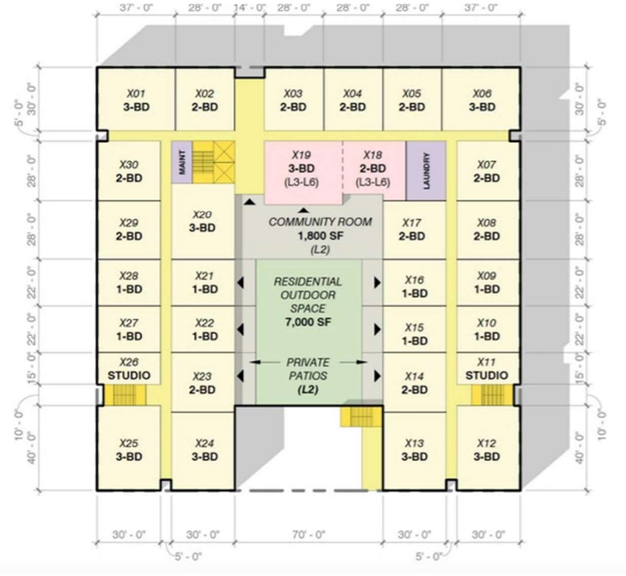
Case Study: Mixed-use affordable housing

- Project Info :
  - podium, 5 over 1, child development center, parking garage, residential amenities, podium courtyard, small retail space
- Test how to integrate energy modeling in the Conceptual and Schematic Design Phase
- Energy Focused Design Process:
  - Internal project kickoff meeting to discuss opportunities to meet 2030 Goals
  - Eco-charrette with Sustainability Lab
  - Take mass models and ideas from Eco-charrette into Sketch-Up and Sefaira
  - Compare scenarios through energy modeling tools

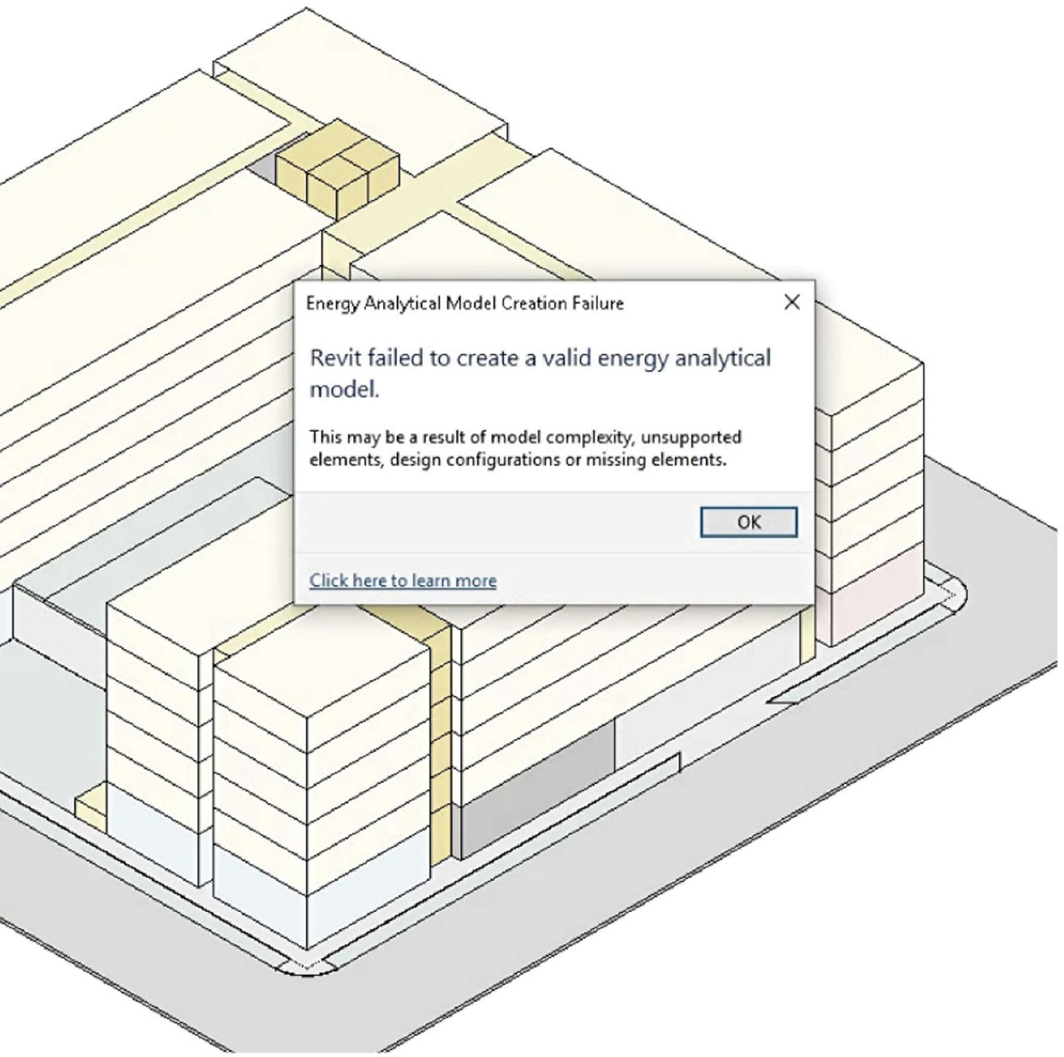




GROUND FLOOR PLAN



PODIUM LEVEL PLAN



Challenges

Energy Modeling is messy

- Affordable housing programming constraints
  - Effectively modeling a complicated program
- Accounting for human behavior
- Integrating new systems that best fit into our current design process
- Sefaira and Insight 360 have different inputs and outputs
  - No perfect solution
  - Which modeling system works best?

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Group of Baseline Concept & Baseline Concept HVA... 387,640 ft²			15,258 (cfm)	372.9 ton	18 kBTU/ft²/yr	$175,753
	Baseline Concept 193,820 ft² Clone Del Export Idf	HVAC System Type: Fan Coil Units and Central Plant	7,629	166.2	18	$87,186
	Baseline Concept HV... 193,820 ft² Clone	HVAC System Type: Package Terminal AC (System 1)	7,629	206.7	18	$88,567
Group of Ext. Hallways Concept & Ext. Hallways H...			16,630 ··· 8%	480.3 ··· 28%	18 ··· 0%	$191,976 ··· 9%
	Ext. Hallways Concept	Fan Coil Units and Central Plant	8,315	213.4	18	$95,239
	Ext. Hallways HVAC test	Package Terminal AC	8,315	266.9	18	$96,737
Group of Balconies Concept & Balconies Concept H...			16,034 ··· 5%	373.4 ··· 0%	17.5 ··· 2%	$182,865 ··· 4%
	Balconies Concept	Fan Coil Units and Central Plant	8,017	166.4	17	$90,786
	Balconies Concept HVAC t...	Package Terminal AC	8,017	207.0	18	$92,079
Group of Jagged Walls Concept & Jagged Walls Con...			5,700 ··· 62%	218.8 ··· 41%	19.5 ··· 8%	$69,358 ··· 60%
	Jagged Walls Concept	Fan Coil Units and Central Plant	2,850	88.1	19	$34,405
	Jagged Walls Concept HV...	Package Terminal AC	2,850	130.7	20	$34,953
	Wavy wall concept	Fan Coil Units and Central Plant	7,356 ··· 51%	159.2 ··· 57%	18 ··· 0%	$84,167 ··· 52%
	Clone of Wavy wall concept	Package Terminal AC	7,356 ··· 51%	202.1 ··· 45%	18 ··· 0%	$85,471 ··· 51%
	Clone of Balconies Concept	Fan Coil Units and Central Plant	8,017 ··· 47%	166.4 ··· 55%	17 ··· 5%	$90,786 ··· 48%

Facade Glazing

Assembly U-Value 0.11 BTU/h·ft²·°F

Solar Heat Gain Coefficient (SHGC) 0.4

Override Glazing Ratio Turn on

Window to Wall Ratio 0.30

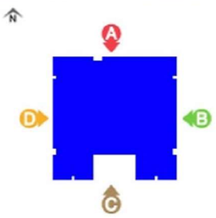
⚠ If this override is applied, the fixed glazing on your 3D model will be considered operable.

Walls

Assembly Type: Stud

Assembly R-Value 30.00 ft²·h·°F/BTU

Building Orientation



Building Rotation 0.0 °

Floors

Floor Finish: Carpet

Ground Floor R-Value 19.58 ft²·h·°F/BTU

Infiltration

Infiltration Type: Air Changes

Design Infiltration Rate 0.2 ACH

Roof Glazing

Assembly U-Value 0.42 BTU/h·ft²·°F

Solar Heat Gain Coefficient (SHGC) 0.6

Roofs

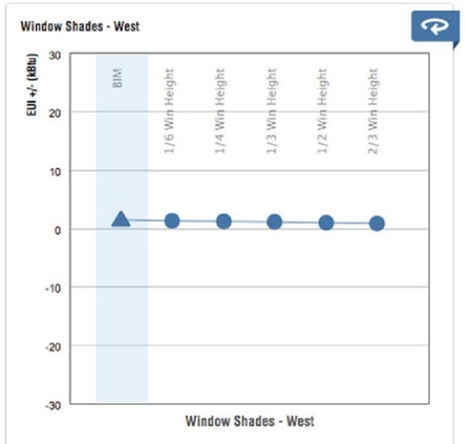
Roof Type: Wood Deck

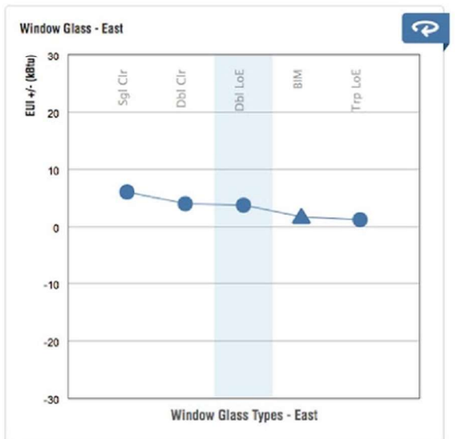
Roof R-value 31.55 ft²·h·°F/BTU

Case Study Project: Testing Sefaira in Conceptual Design

Small Impact

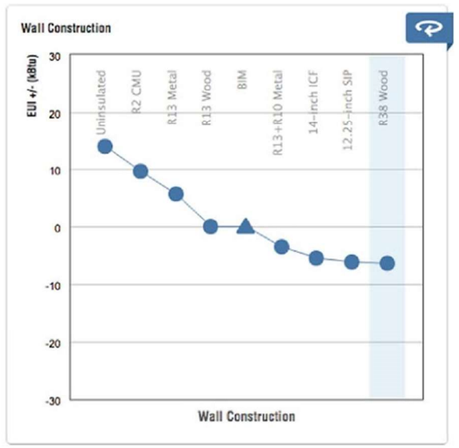
EXTERIOR / MASSING INTERVENTIONS

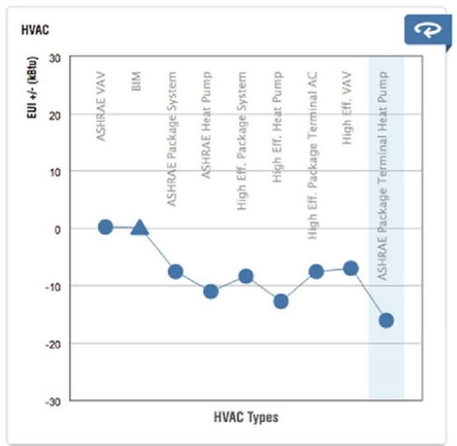


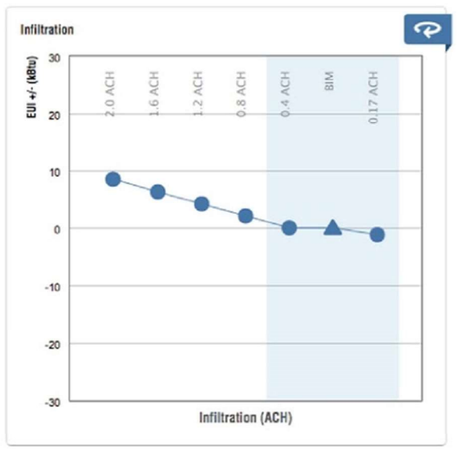


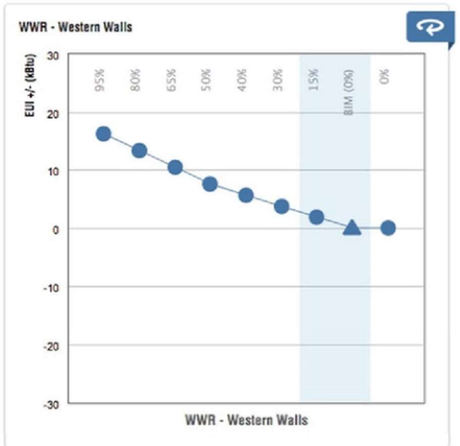
Big Impact

ENVELOPE INTERVENTIONS









Case Study Project: Testing Insight in Design Development

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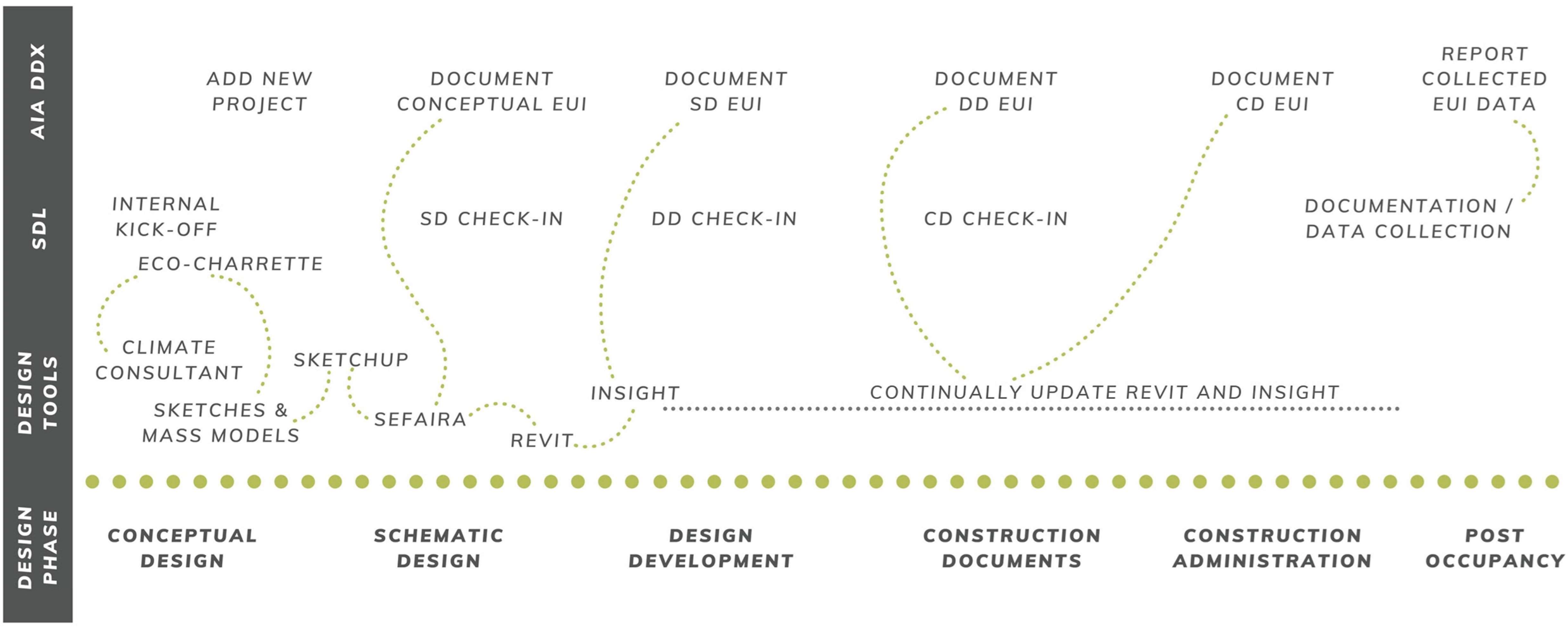
Takeaways

- For affordable housing: Prioritize efficient envelope over massing and exterior shading
- Sefaira best integrates into Conceptual and Schematic Design Phases
- Insight 360 is more helpful in Design Development and Construction Documents Phase
- Use one tool to fill in the gaps of the other



Prototypical Design Process

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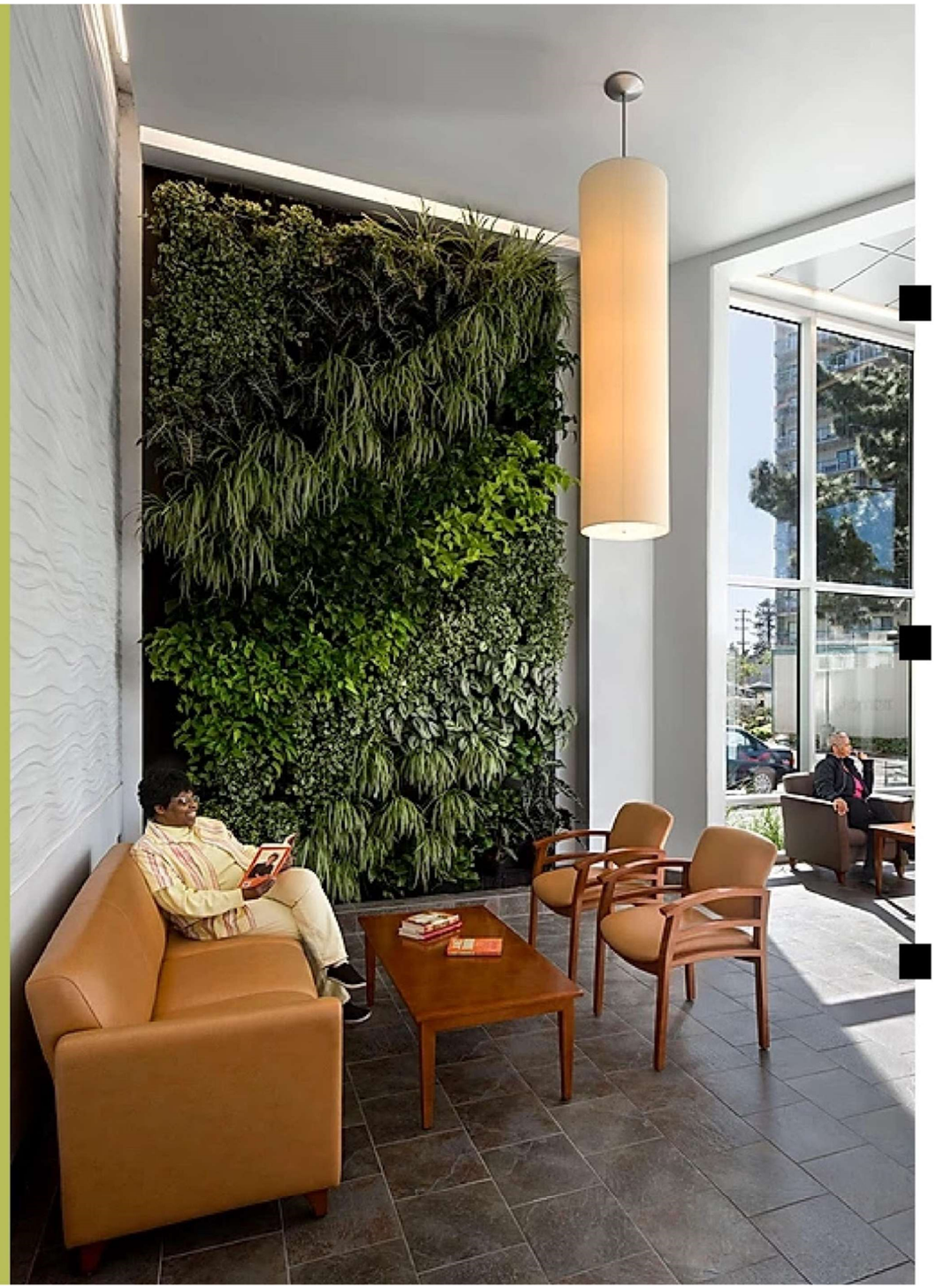
Next Steps



STANDARDIZING REPORTING PROTOCOL

CONTINUING TO TEST ENERGY MODELING TOOLS (COVE TOOL)

POST-OCCUPANCY EVALUATIONS

Thank you!

Emily Waldinger, NZEL Intern
Matt Bokar, NZEL Mentor

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