

Net Zero Emerging Leaders Internship

Energy Use Intensity Feedback and Integration of Energy Modeling

Energy Trust of Oregon

Jessica Meylor

Zaq Dohallow, Amy Sheckla-Cox





I'm Jess...



and this is Otak.

Sustainability at Otak

Otak Signed the AIA 2030 Commitment in 2011

Formed Green Otak (GO) Committee

GO Operations

- Office Energy Use
- Waste Reduction and Supplies
- Transportation

GO Training

- Promoting Staff Accreditation
 - LEED
 - WELL
 - ECO Districts
 - Envision

GO Practice

- Improving Design Process To Make "Greener" Work
- AIA 2030 Design Data Exchange

- Net Zero Emerging Leader (NZEL)

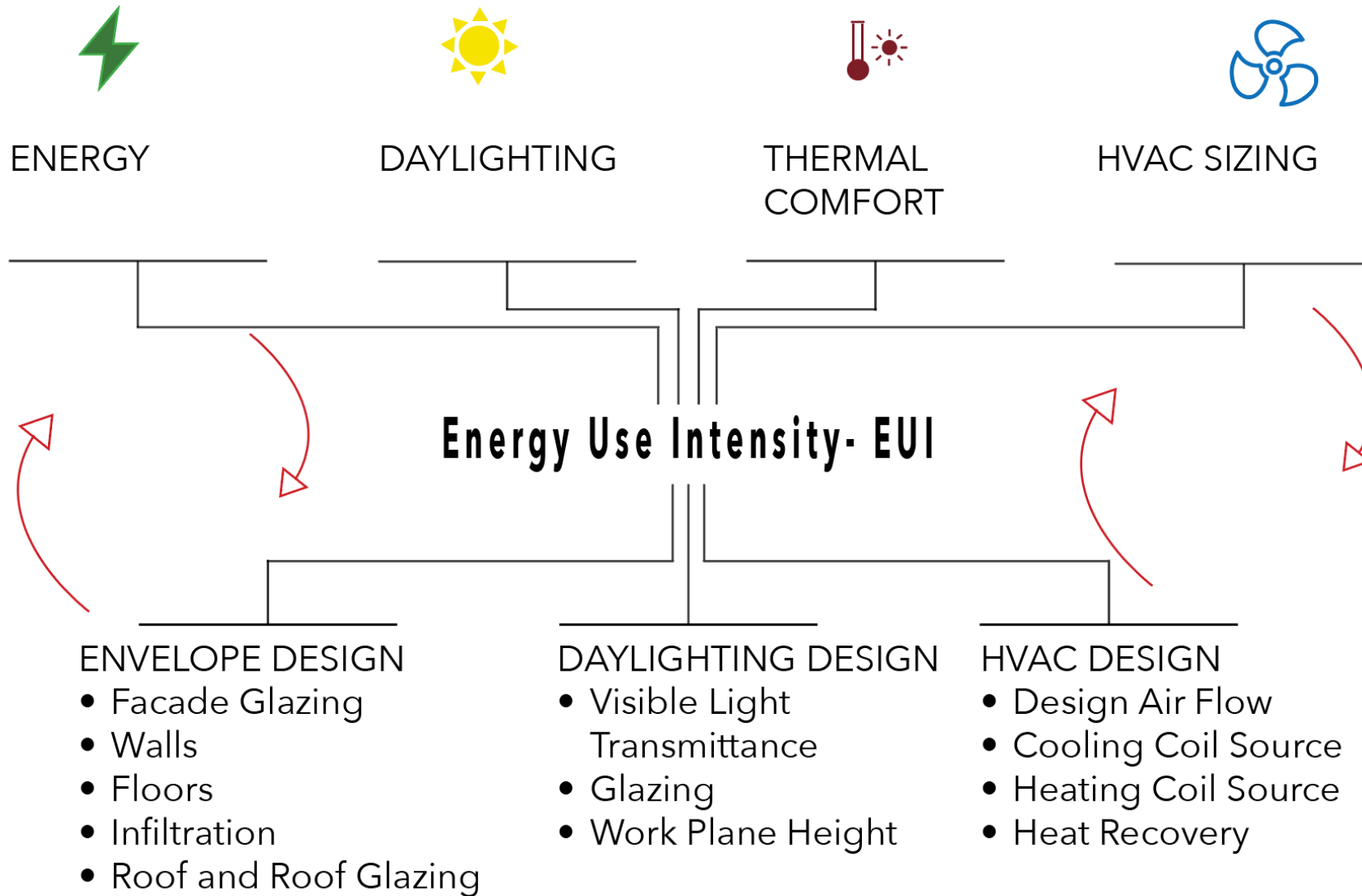
NZEL Internship Objectives

- 1** worked on energy modeling and analysis through Sefaira Architecture...
- 2** used troubleshooting techniques to understand and navigate best tool practices for optimal use...
- 3** contributed data to building performance feedback loop to better inform design...
- 4** established paths of integration and use for further energy modeling integration..

What is Energy Modeling?

Output Analysis

Input Assessment



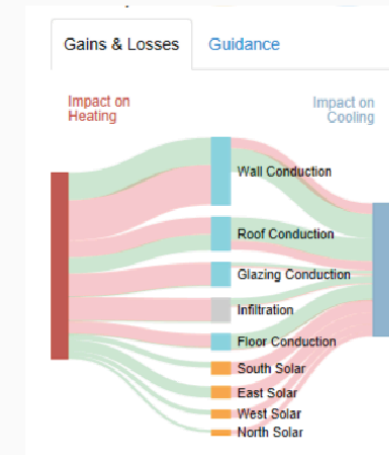
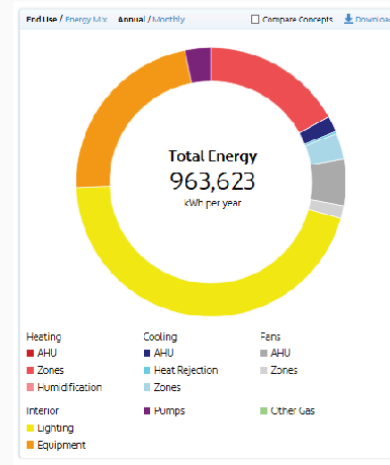
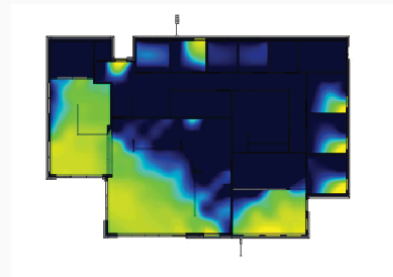
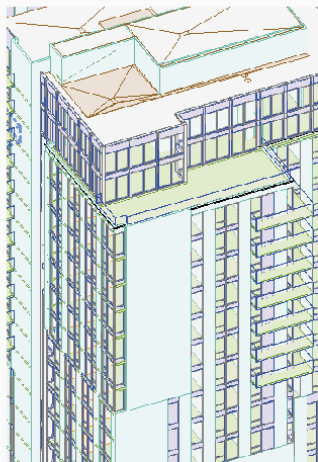
Using Sefaira For Energy Modeling

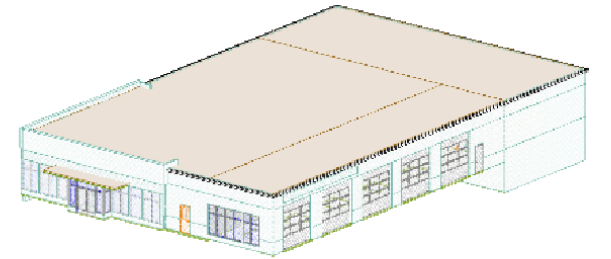
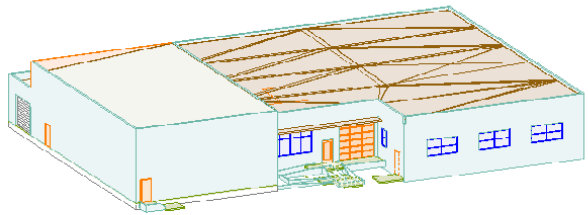
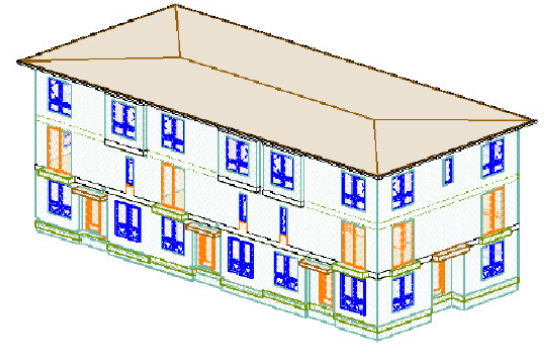
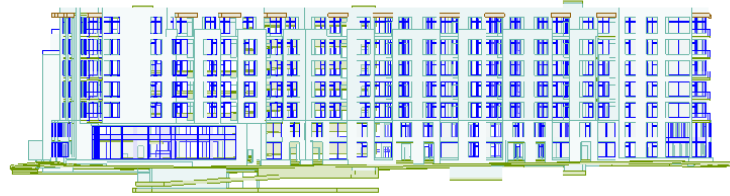
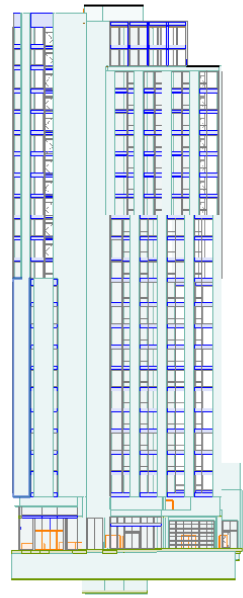
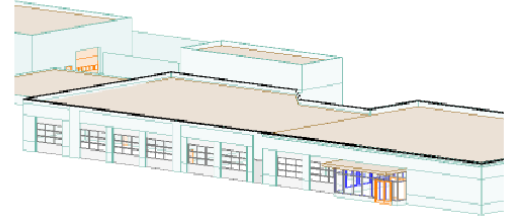
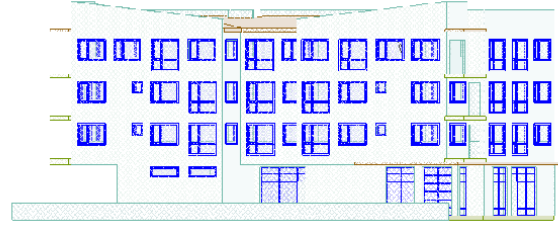
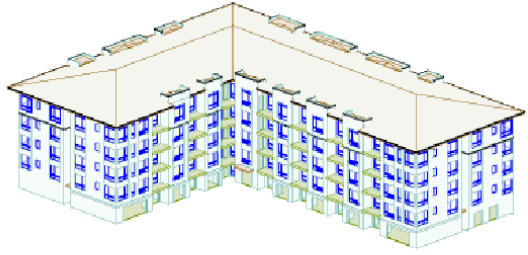
Sefaira Architecture

- Explore design options and understand impacts on building performance
- Analyze building envelope, HVAC Systems and on-site renewable energy potential
- Test effectiveness of current or compared energy conservation strategies

Impacted Design Process Phases

- Project Win/ Kick Off; Concept Pre-Design; Design Development





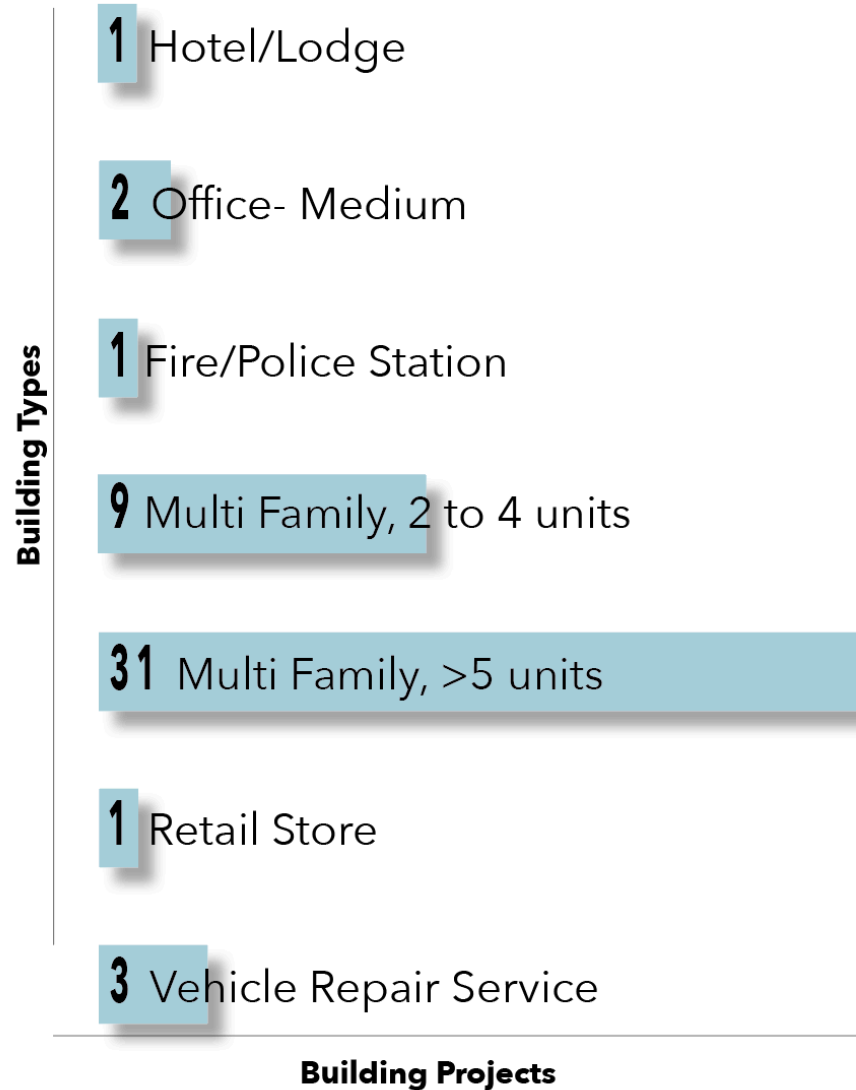
Building Type Use

Otak 2018 Portfolio

Oregon Projects

Through the AIA 2030 DDX, the primary building use types offer a look at Baseline EUI comparisons for projects and allows Otak to look at the diversity of our portfolio.

* Building Type Source from
AIA 2030 DDX Firm Reported Levels



Energy Modeling Case Study: Hyatt Place Portland, Oregon



This mixed-use building on Northwest 12th and Flanders represents a new kind of sustainable design for hospitality and housing in Portland, informed and planned around elegant design challenges to comply with new building codes and the needs of a dynamic, developing city.

Energy Modeling Case Study: Hyatt Place Portland, Oregon



Development Phase
Use Type: Lodging - Hotel
199,801 Gross Square Feet
23 Floors

National Average EUI: **94.0** kBtu/sf/yr

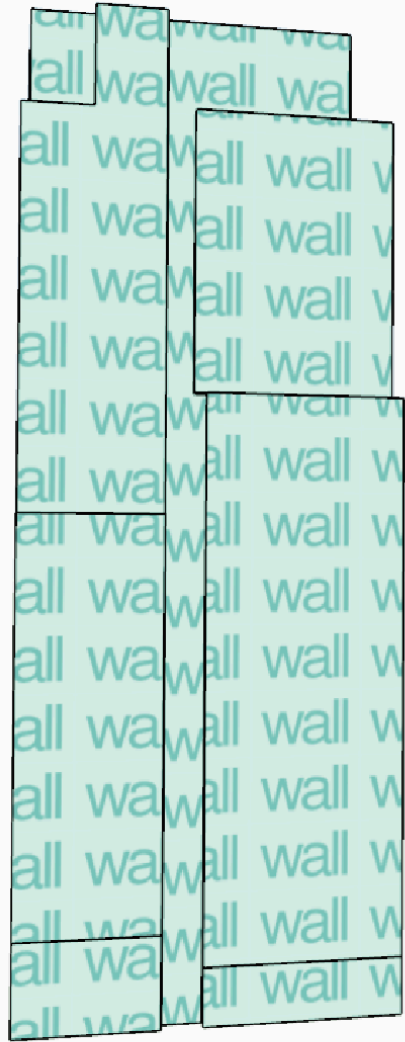
Zero Tool Baseline EUI: **69.3** kBtu/sf/yr

AIA 2030 Goal EUI: **20.8** kBtu/sf/yr

Sefaira Predicted EUI: **18** kBtu/sf/yr

76% Percent savings for the project energy consumption

Energy Modeling Case Study: Hyatt Place Portland, Oregon



SketchUp Mass Energy Model



SketchUp Energy Model



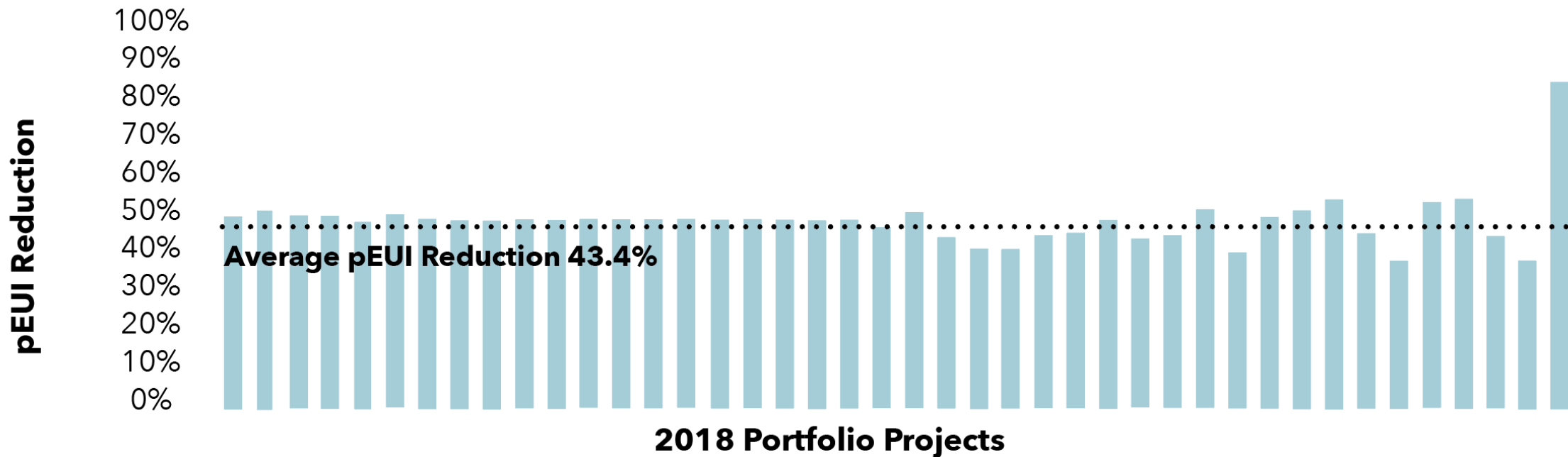
Revit Energy Model

Results

For 2018, Otak submitted **41** project buildings, providing over **1,063,791** gross square feet of building envelope and energy analysis.

100% of our submitted projects were energy modeled using Sefaira.

Building analysis average reflects a **43.7%** predicted EUI reduction in relation to the 70% reduction for the net zero challenge goal.



Moving Forward

Integration of Energy Modeling at Otak

1

Early Communication and Planning

- Sustainability Action Plan
- MEP Team
- Client

2

Standardize Practice within Design Process

- Create and implement the use of designated energy modeling resources and sharing space

3

Create a Path to Assist Further Analysis

- Data Driven Design
- Building Performance Assessment for Comparison
- Daylighting Analysis and Concept Stage
- Climate Design Evaluation
- Informed Energy Code Compliance