The NextGen in Passive Design:

High Rise, All-Electric: Seniors enjoy it all at Terwilliger Plaza

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LEARNING OBJECTIVES

Renaissance of Passive Design

Passive design is seeing a renaissance fro single-family housing to larger-scale projects. Participants will learn how this commercial project “penciled out” and give tools for other projects.

Getting to Yes

The ownership buy-in journey in everything from technical aspects to design is essential. We show how to use data-driven analysis to inform design.

Overcoming Roadblocks with Facade Optimization

Learn multiple ways how the design team overcame perceived roadblocks by pivoting engineering design with simplified facade optimization to achieve tangible sustainability goals.

Applying Data to Define Passive Solutions

Understand how energy modeling and life cycle analysis informed the passive reuirements in MEP systems, as well as how passive design strategies relate to buildings resiliency goals.

LEARNING LEVEL: INTERMEDIATE

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Parkview at Terwilliger Plaza

Terwilliger Plaza empowers members to maintain active and engaged lives within a supportive residential community by providing a stimulating environment and embracing representative self-governance.

- Terwilliger Plaza is a non-profit continuing care senior living facility
- A downtown urban campus consisting of 3 interconnected buildings
- Parkview a new full city block 326,000 sf independent living housing project
- Consists of 127 units, amenity spaces and underground parking
- All electric high rise connected to campus via a sky bridge

PHIUS CERTIFIED

TARGETING:
PHIUS + 2018 Certification

PROJECT GOALS

OWNER REQUIREMENTS

Luxury Apartments with Amenities

Thermal Comfort

Indoor Air Quality

Lighting Levels

Top of the Line Appliances

Need for Larger Facility

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Stakeholder Buy-in Journey

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Why Passive House?

Passive House recommended because:

- Uncertain design budget – conservation became the baseline
- Client wanted cost effective tangible results
- Passive and inherent energy reducing principals
- No added maintenance or operational requirements
- Thermal comfort and quiet interior spaces suited to senior living
- Foundation for higher sustainable design goals

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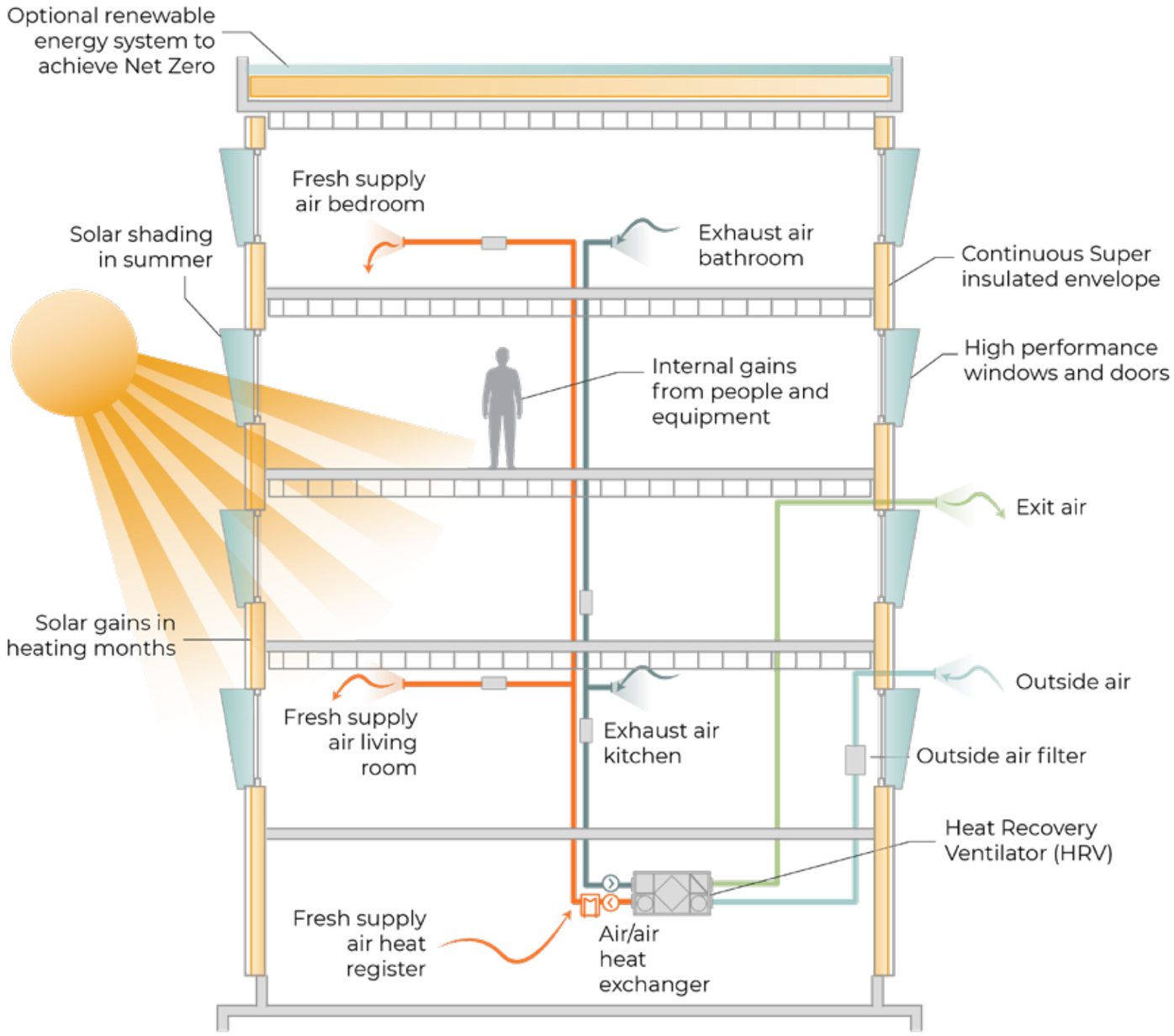
Multifamily Advantages to Passive House

- Less envelope area relative to internal volume
- Internal heat gain offsets envelope heat loss
- Greater HVAC system options at large scale



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Data-driven Design and Lessons-learned

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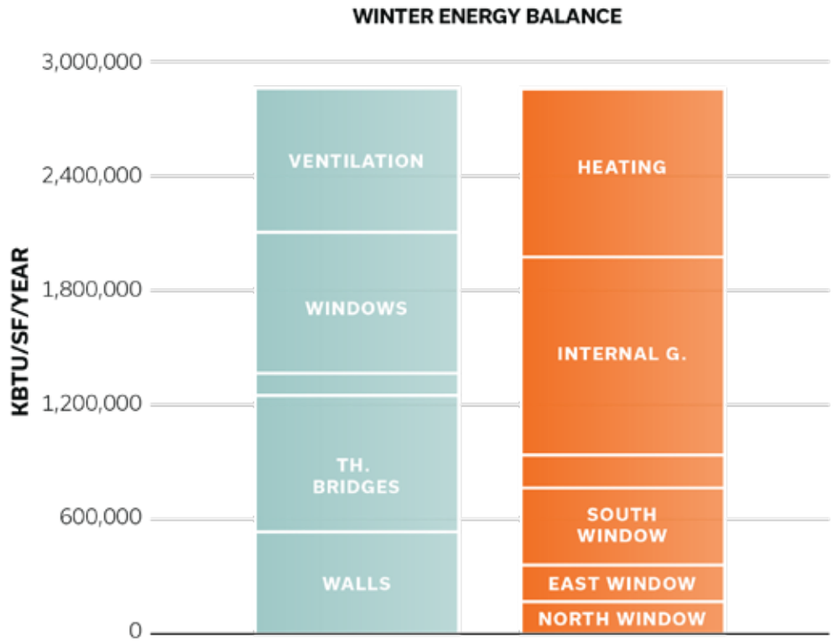
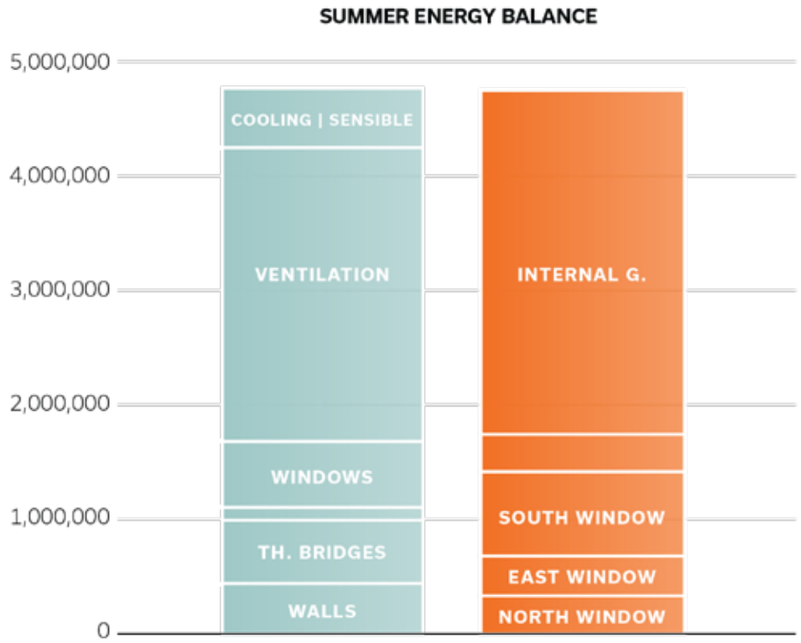
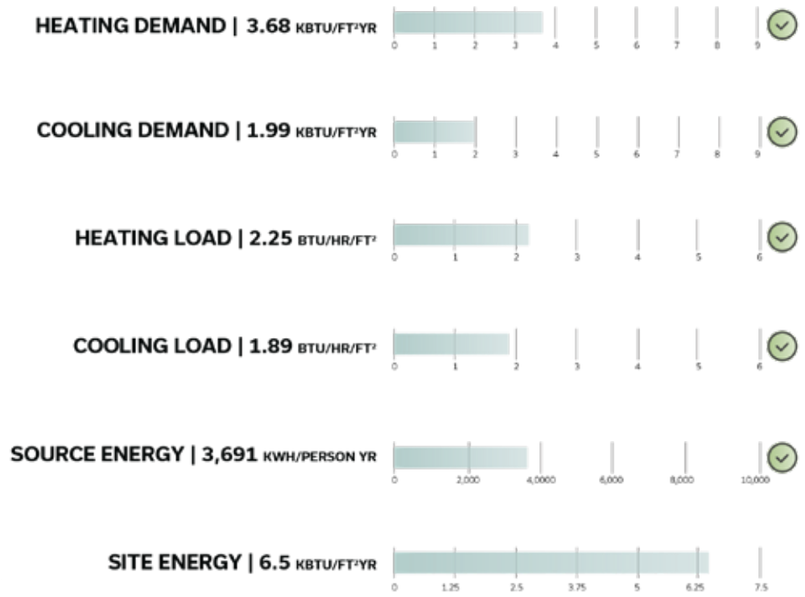
Early Design Analysis







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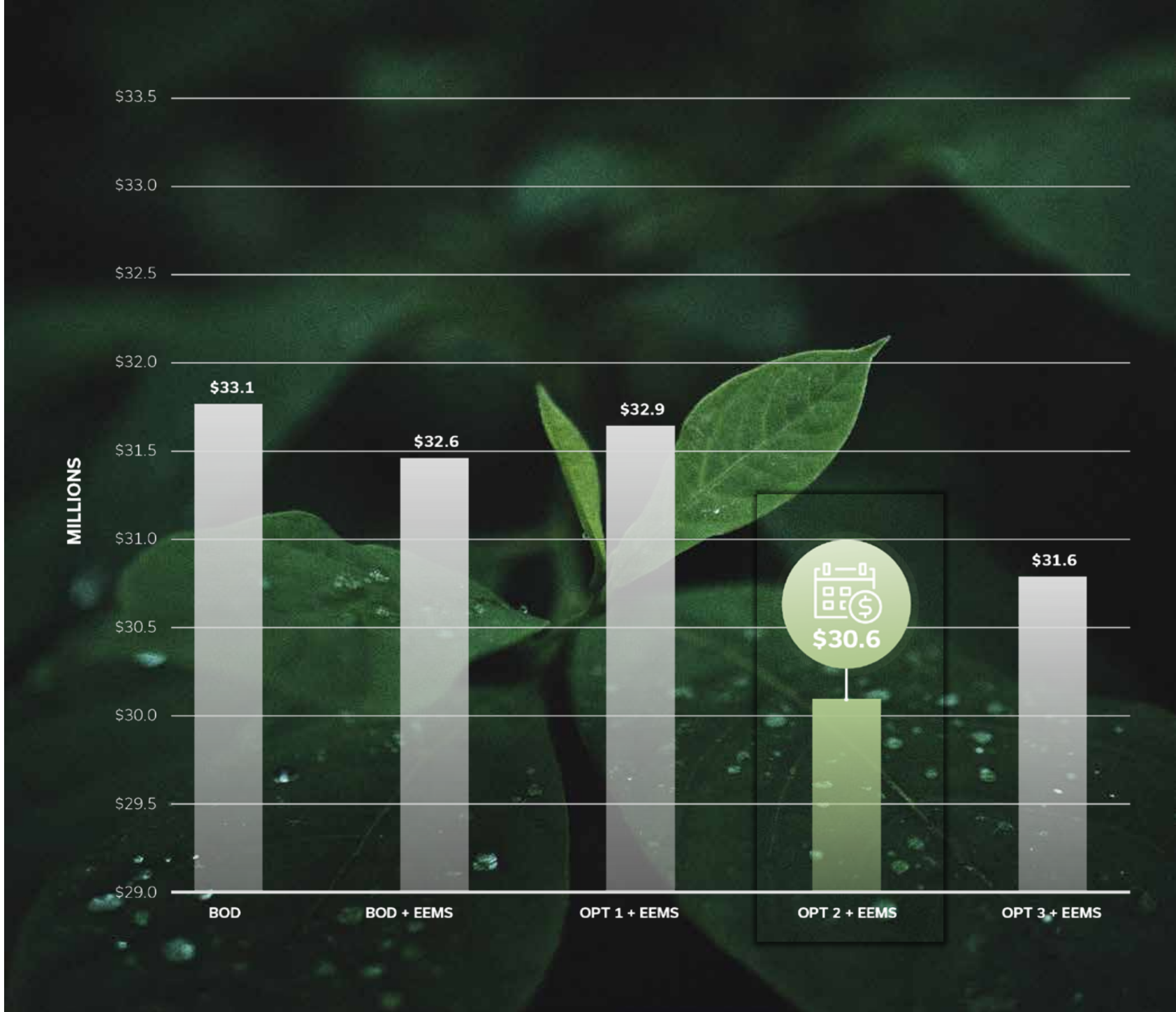
30 Year Life Cost Analysis

Discount Rate
(does not include inflation)

30 Year Analysis Period

5% Utility Rate
(based on DOE calculator)



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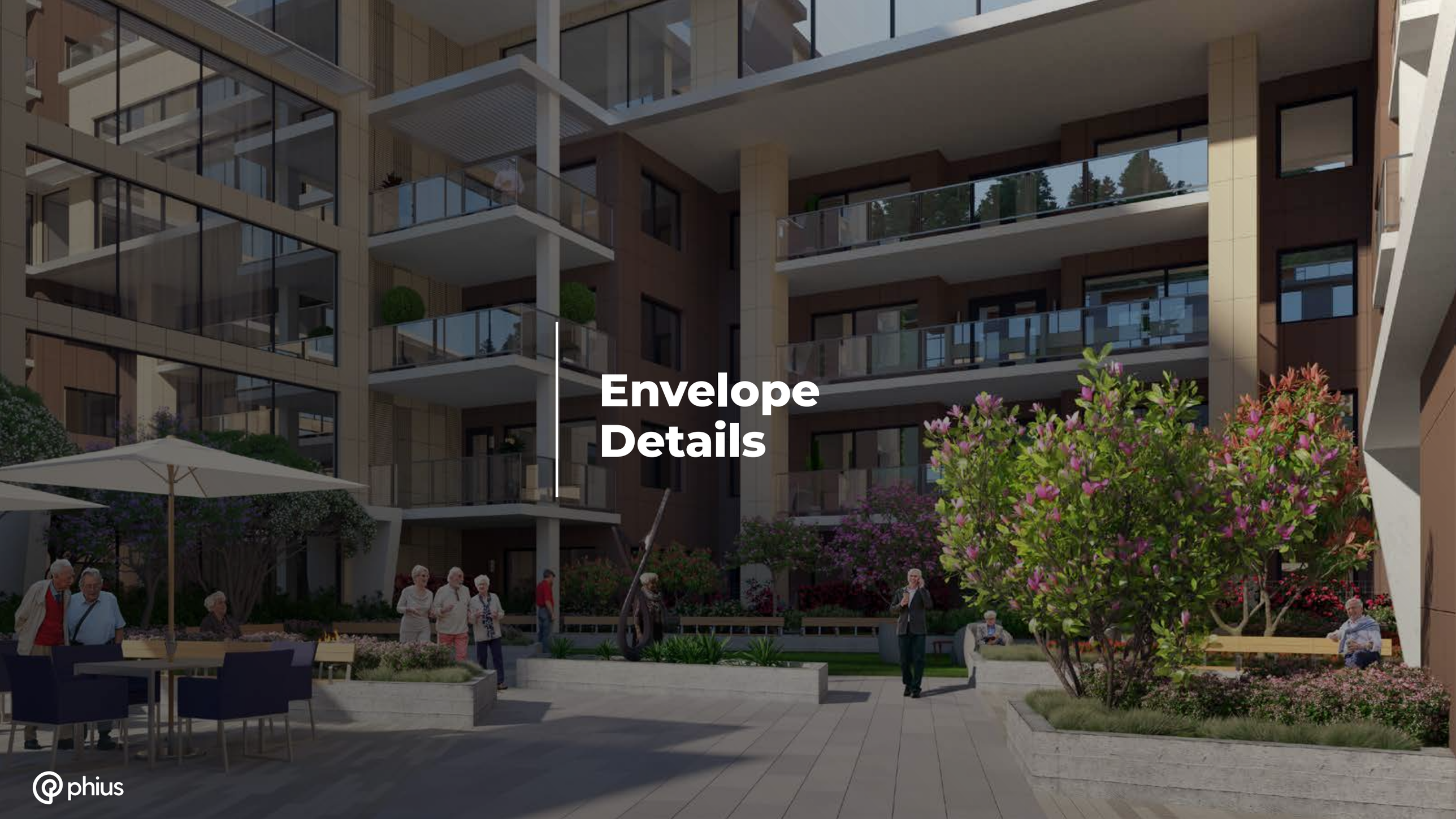

Envelope Details

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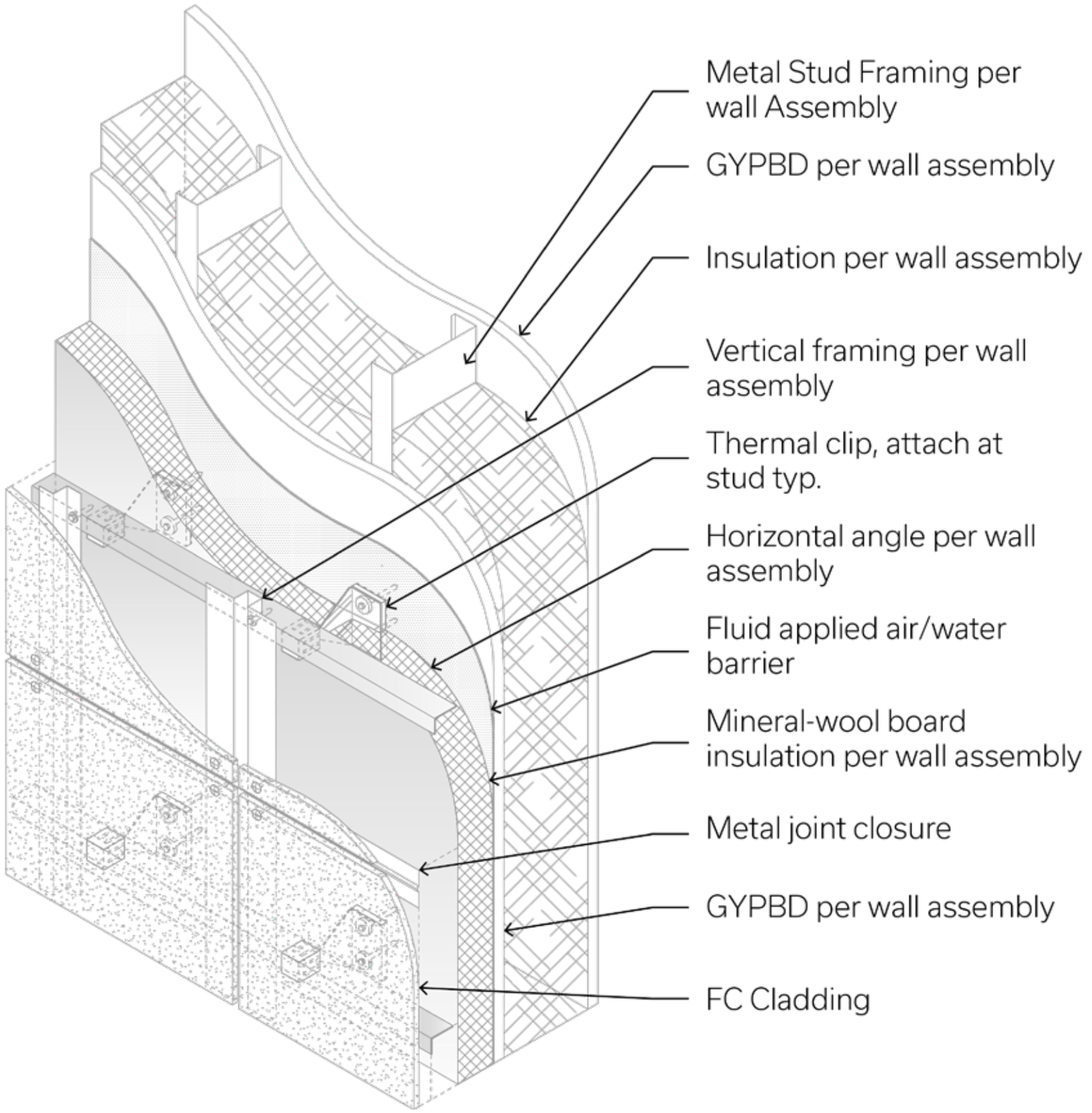

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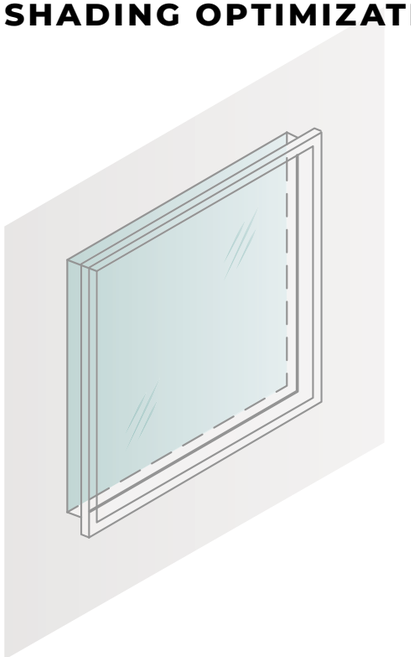
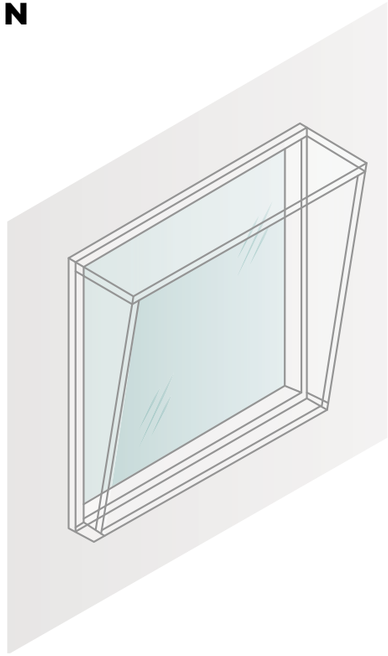
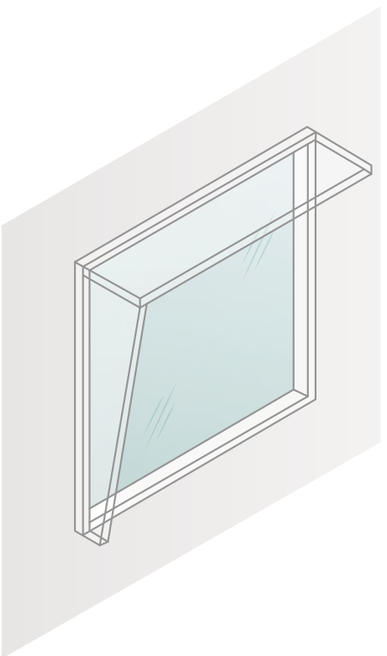
Envelope Details

WINDOW PERFORMANCE

SHADING OPTIMIZATION







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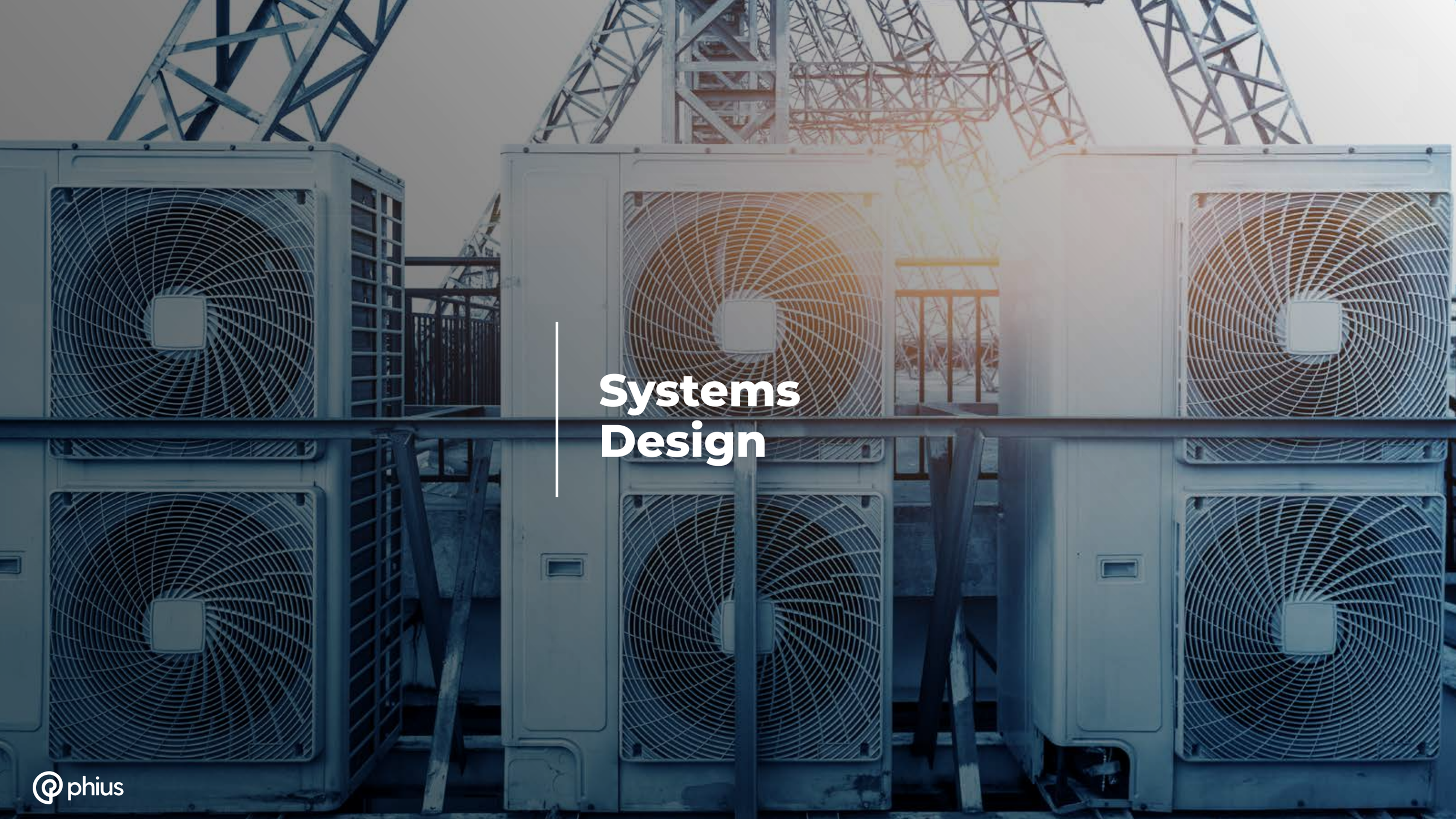

Systems Design

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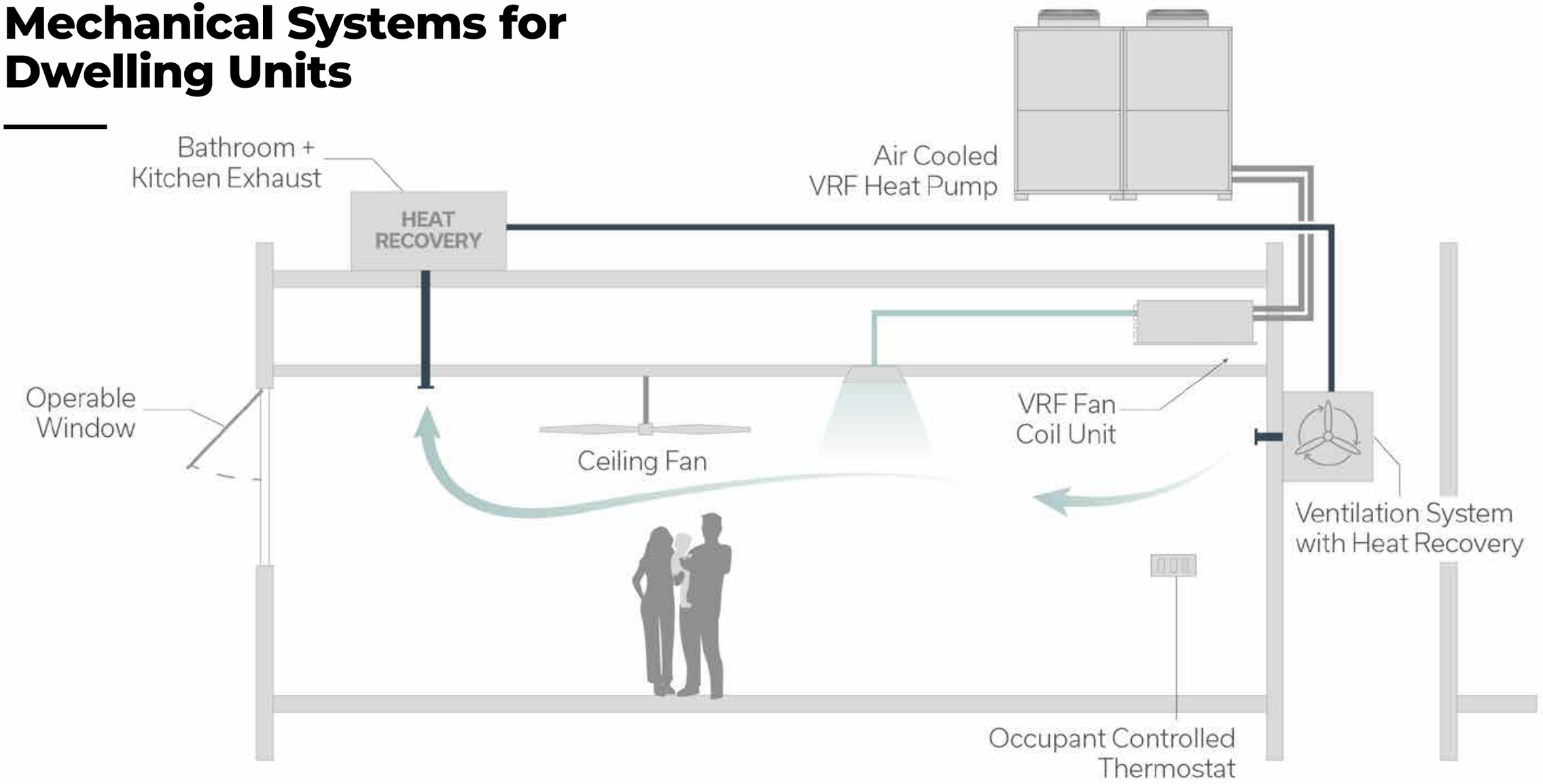
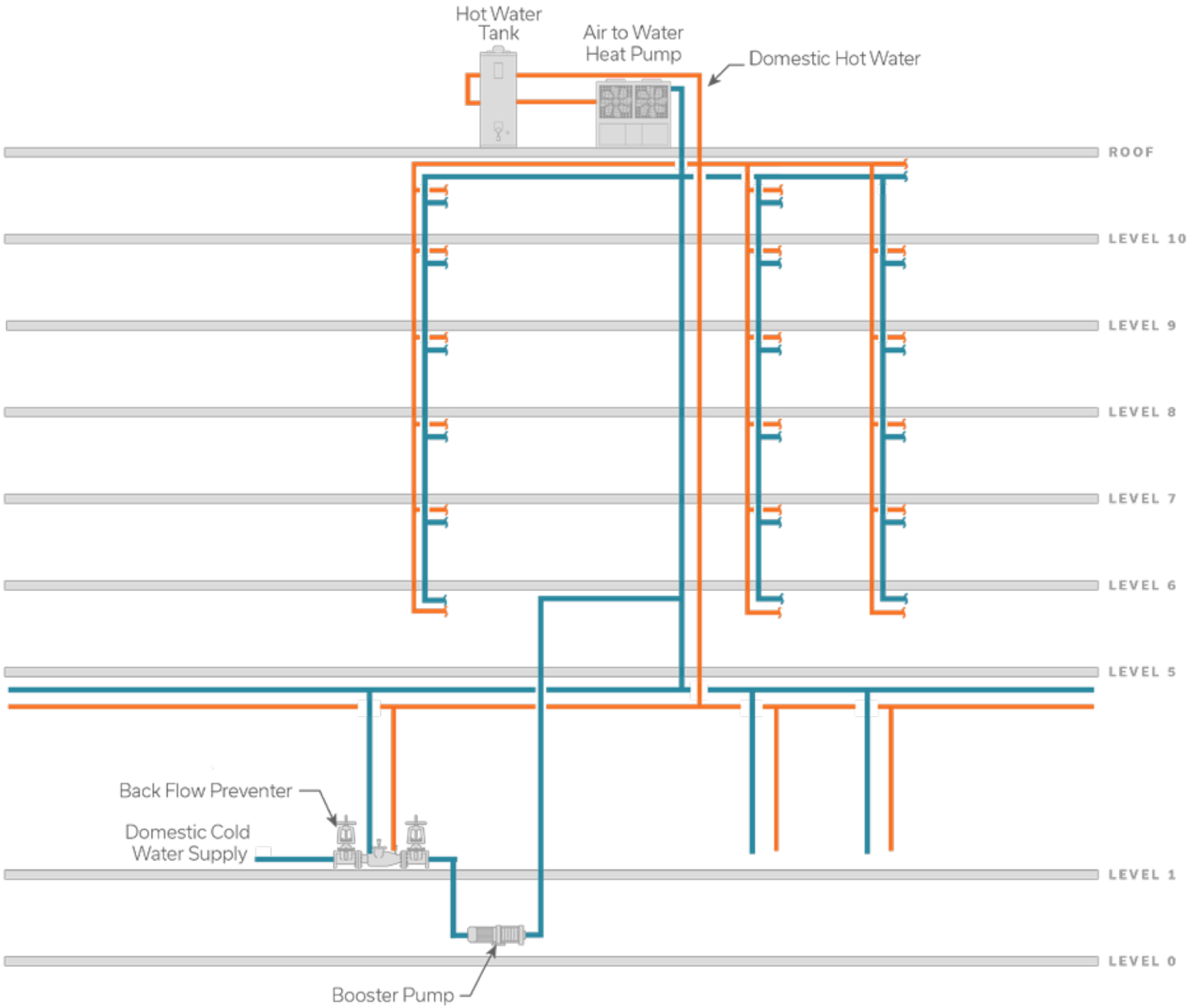
Mechanical Systems for Dwelling Units



Domestic Hot Water Heat Pumps



Appliances

ECO-APPLICANCES

CLOTHES WASHER

CLOTHES DRYER

CEILING FAN

KITCHEN HOOD

RANGE COOKTOP

DISHWASHER

REFRIGERATOR

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PV Analysis

Rooftop System = 195.7 kW

Rooftop
PV ARRAYS

Adjacent Building Systems = 143.3 kW

Key Takeaways

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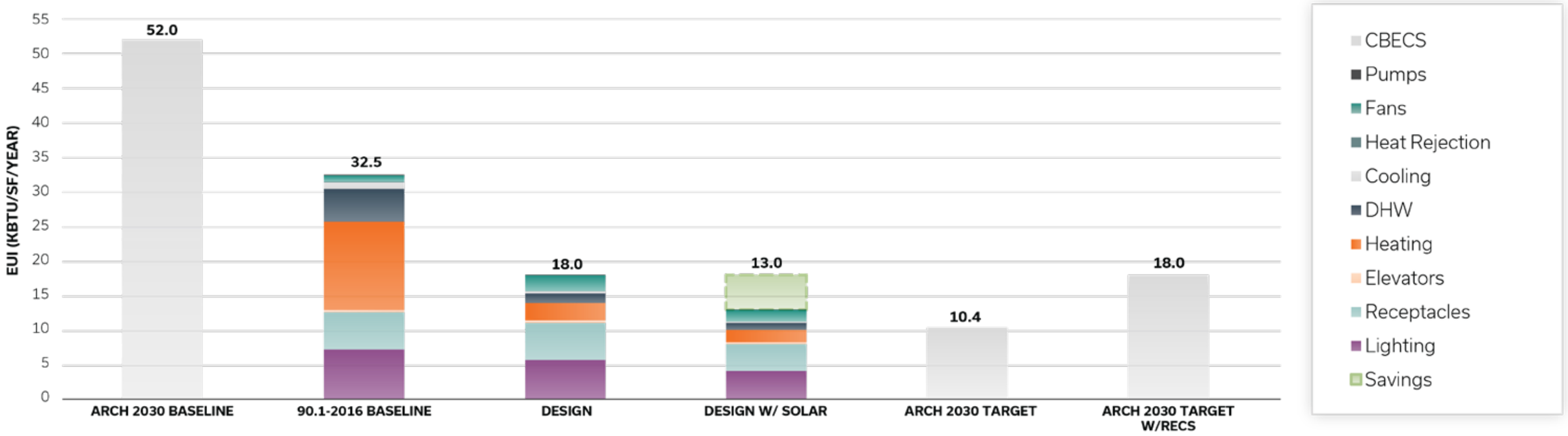
EUI | Energy Use Index



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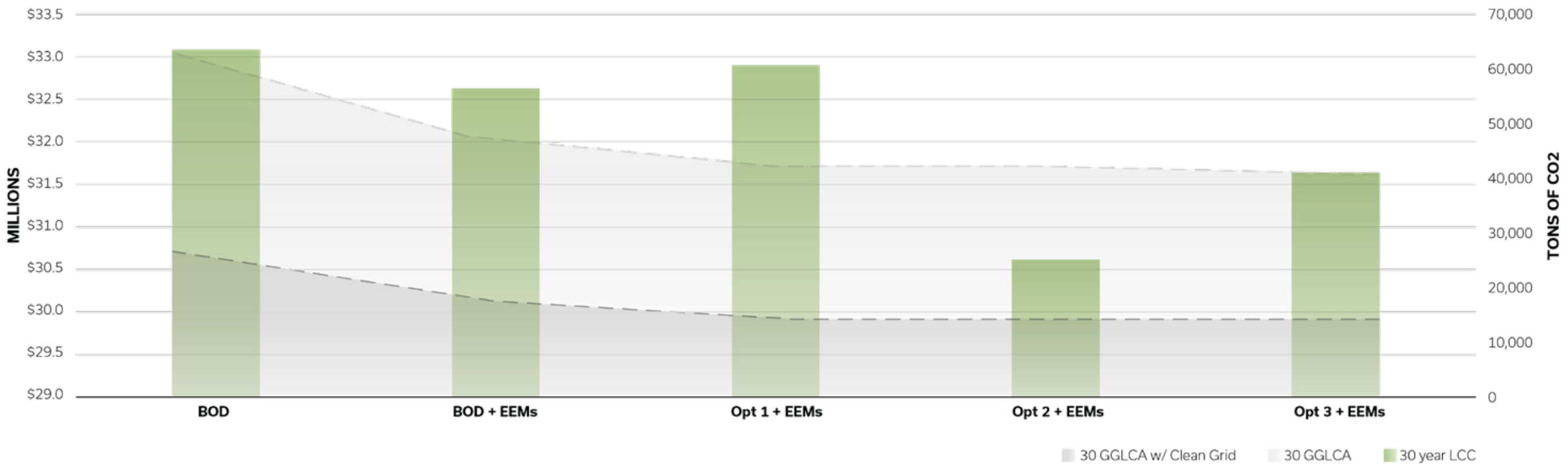
30 Year
Greenhouse Gas Emissions



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Summary

Passive House Implementation

What appealed to Owner and benefited them

How was Passive House incorporated into the design

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Thank you!

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