THE FUTURE WE CHOOSE

INTRODUCING GC3: GENSLER CITIES CLIMATE CHALLENGE

Rives Taylor| GENSLER

SAME
April 2022

#1

"GREEN" DESIGN FIRM

Engineering News Record (2016-2019)

TOP 8

FIRMS WITH MOST VERIFIED NET-ZERO PROJECTS

1 BILLION

SQUARE FEET OF LEED-CERTIFIED PROJECTS

1,500+

LEED-CERTIFIED PROJECTS

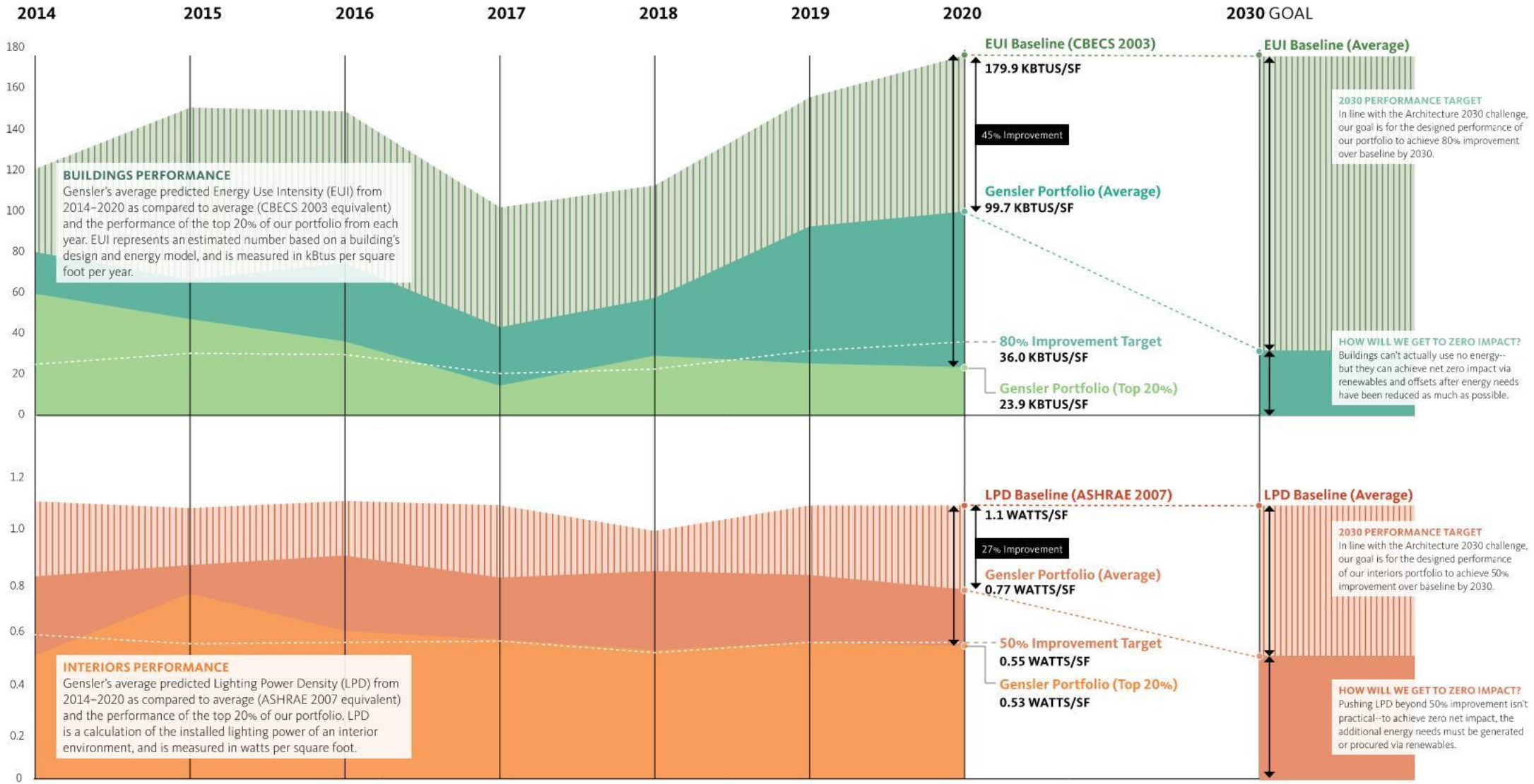
IMPACT THROUGH DESIGN

Gensler Signs Paris Pledge for Action on Climate Change

Knowing the impact that design has on climate change, we signed this historic pledge to mark our commitment and urge our clients and fellow architects to reduce emissions through high-performance design.

TRACKING OUR PROGRESS TOWARD OUR 2030 GOALS

THE PERFORMANCE OF THE TOP 20% OF GENSLER'S PORTFOLIO HAS ALREADY ACHIEVED PERFORMANCE IMPROVEMENT TARGETS IN LINE WITH OUR 2030 GOALS.



GENSLER'S VISION: GC3

DIANE HOSKINS
ADDRESSING THE
UNITED NATIONS

SEPTEMBER 24, 2019

"WE ARE FAST-TRACKING OUR GOALS AND TAKING IMMEDIATE AGGRESSIVE STEPS FOR ALL OUR WORK TO BECOME COMPLETELY CARBON NEUTRAL OVER THE NEXT DECADE."

1 YEAR AGO

GC3 | Gensler

CITIES CLIMATE CHALLENGE

Commitment to carbon neutrality

Accelerate progress in major cities

Challenge our industry

TODAY

10.21M METRIC TONS OF CO2 SAVED FROM OUR PORTFOLIO AND IMPACT

GOAL

21M METRIC TONS OF CO2 SAVED **BY 2030**

CARBON AND THE BUILT ENVIRONMENT

OPERATING CARBON
(USING BUILDINGS)

In an average building today, operating energy accounts for 72% of the overall energy consumption. At the scale of Gensler's portfolio, that's approximately 23 million metric tons of CO_2, based on our 2019 design work.

+

EMBODIED CARBON
(MAKING BUILDINGS)

Embodied energy, the energy associated with building materials, accounts for 28% of an average building's overall energy consumption. That's approximately 9 million metric tons of CO_2 emitted each year for a portfolio of our scale.

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CARBON OFFSETS

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TOTAL NET CARBON IMPACT

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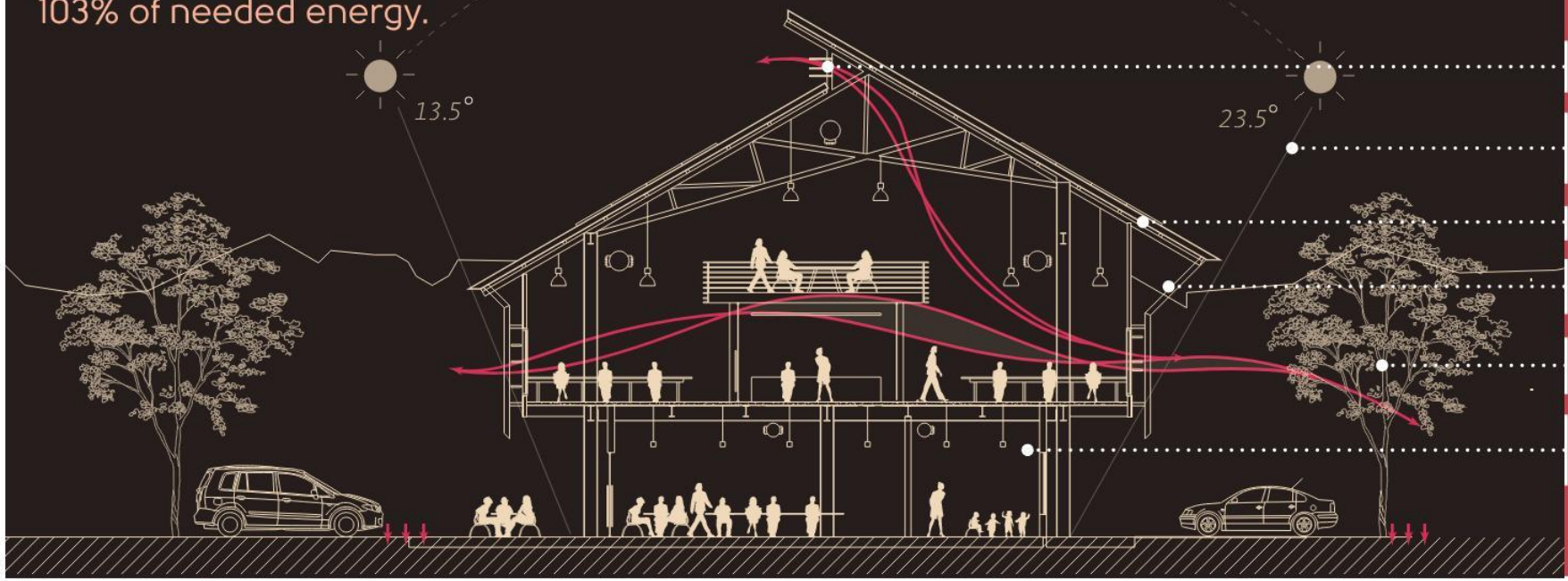
STRATEGIES

- Right-sizing: strategies that use the least space possible without sacrificing function.
- Significant reduction in operating energy per square foot.
- Gradual increase in on-site renewable energy production.
- Electrification to increase flexibility for renewable procurement.

We used passive design strategies to maximize building performance. As the global headquarters for a growing coffee brand, this structure needed to honor the company's long-held commitment to sustainability. The building is designed to achieve LEED Platinum Certification, maximizing both energy and water credits. The design uses sustainable materials that improve space quality, including rapidly renewable cork flooring that provides a warm atmosphere for the workspace area.

Optimizing the building's form and orientation improves energy performance, allowing on-site photovoltaics to generate 103% of needed energy.



Operable windows increase natural cross-ventilation throughout the space.

Orientation reduces solar exposure on the east and west facades by shading the longer north and south facades with roof overhangs.

The high reflectance roof minimizes heat gain.

The building's narrow shape allows for natural ventilation and daylight penetration.

The use of native plants and other irrigation techniques reduces water use by 78%.

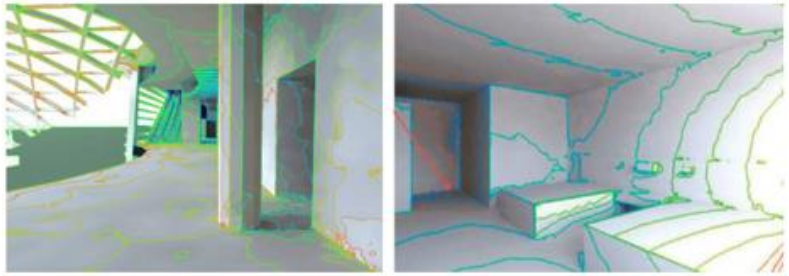
The elevated floor plan takes advantage of the lower humidity level during wet months and reduces parking impact.

SUSTAINABILITY
ENERGY AND EFFICIENCY

Building envelope performance was a driving factor for the project. The glass curtain wall was a key consideration, and the team utilized high efficiency glazing, advanced curtain wall framing, and triple glazing in select areas in order to reduce heat gain, promote occupant comfort, ensure daylight delivery, and insulate travelers from airport noise.

An advanced hotel room key system is utlized for guests, which turns off lighting, plug loads, and minimizes heating and cooling when rooms are unoccupied. Daylight modeling was performed to inform space planning and ensure effective daylight delivery. Additional lighting strategies include high-efficiency fixtures, widespread use of daylight sensors, lighting controls and schedules based on occupancy, time-of-use and safety requirements.

DAYLIGHTING STUDIES

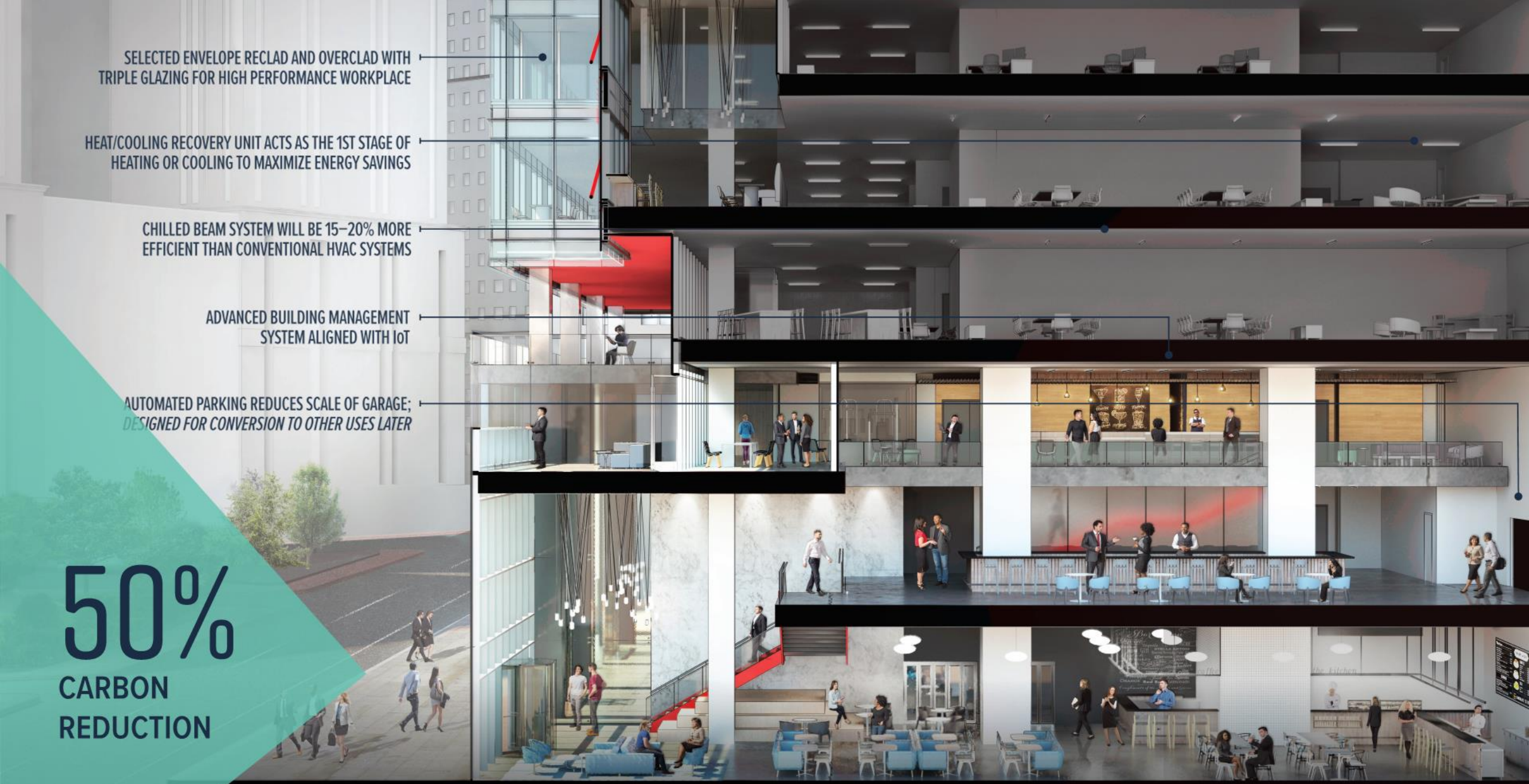


49%
ENERGY COST REDUCTION

43%
ENERGY USE REDUCTION

"The Hotel and Transit Center establishes a new standard for airport hotels, conference centers and connecting urban centers with aviation services via mass transit. Achieving LEED Platinum status reflects our ongoing commitment to reduce our consumption of resources, minimize our carbon footprint and enhance our community."

Denver International Airport CEO Kim Day

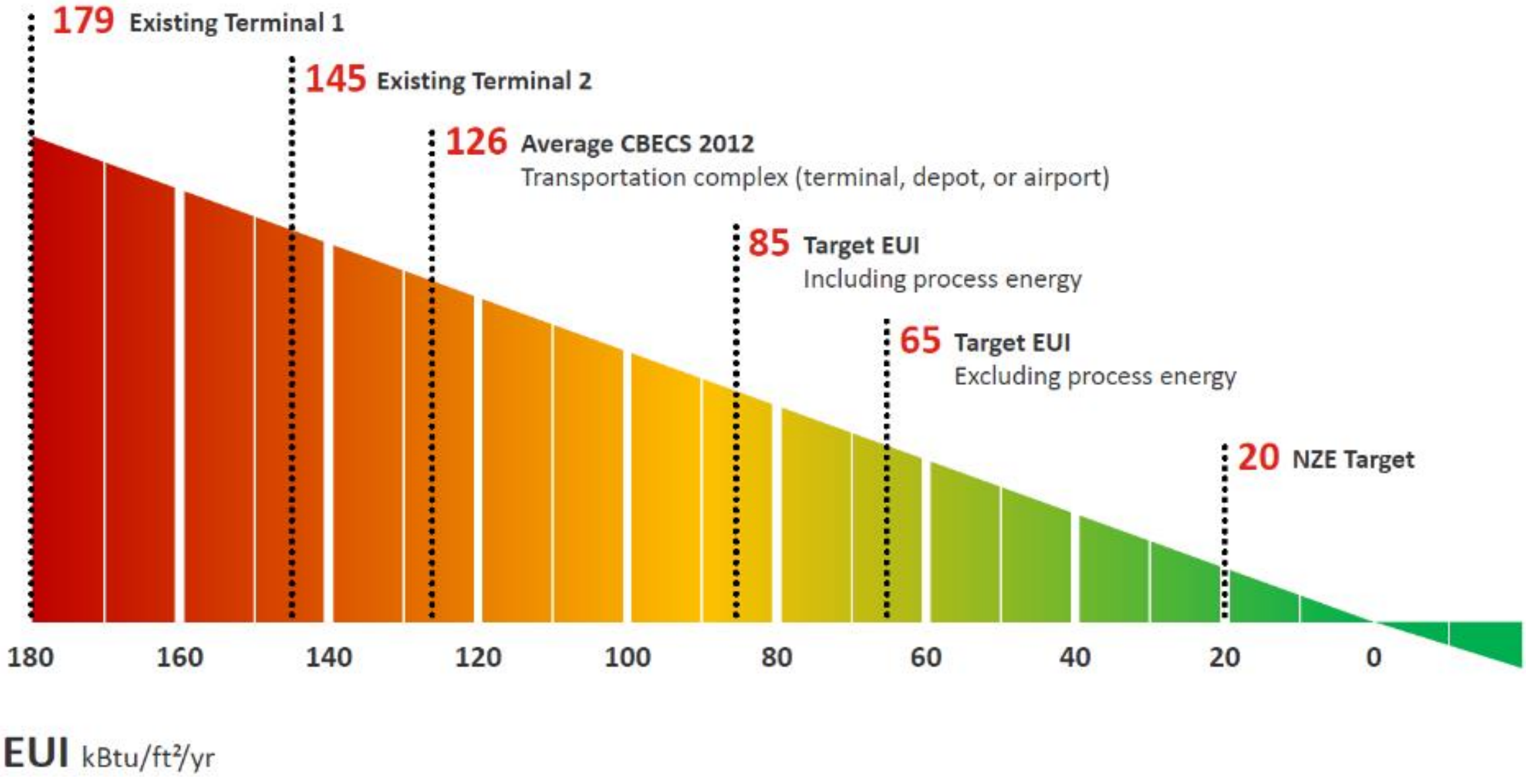


50%

CARBON REDUCTION

ONE POST OFFICE SQUARE // BOSTON, MA

Gensler


179 Existing Terminal 1
145 Existing Terminal 2
126 Average CBECS 2012
Transportation complex (terminal, depot, or airport)
85 Target EUI
Including process energy
65 Target EUI
Excluding process energy
20 NZE Target
180
160
140
120
100
80
60
40
20
0
EUI kBtu/ft²/yr

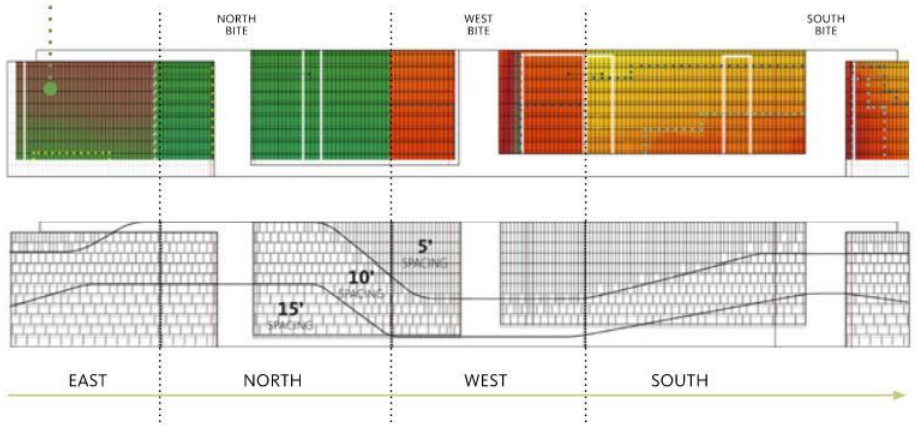
We delivered an all-electric building that gives the client more control over their carbon footprint. Adobe sought a future-focused space that would reinforce the company's values and nurture a culture of creativity and innovation. By opting for an all-electric building, they are able to maintain greater control over their own operational carbon footprint and energy performance—electricity can be pulled from the grid at times when the energy mix is cleaner and uses more renewable sources—and in the future, battery storage or other on-site energy solutions will be easy to incorporate. These energy options provide Adobe with flexibility now and in the future, ensuring the long-term viability and performance of the building.

Automated blinds and external shading hoods control solar heat gain and glare.

Public spaces have more transparent facades that provide a view into Adobe's culture and out over the city, while work areas benefit from reduced glass and external hoods to enhance performance and comfort.

The post-tensioned concrete structure maximizes floor-to-ceiling height and increases daylight penetration into the workspace.

To minimize material use, facade hoods were distributed based on a careful study of the solar radiation that falls on the building each year.



A high-performance facade and carefully spaced hoods maximize current solar performance, while an all-electric approach provides future flexibility and resilience.

CARBON AND THE BUILT ENVIRONMENT

OPERATING CARBON
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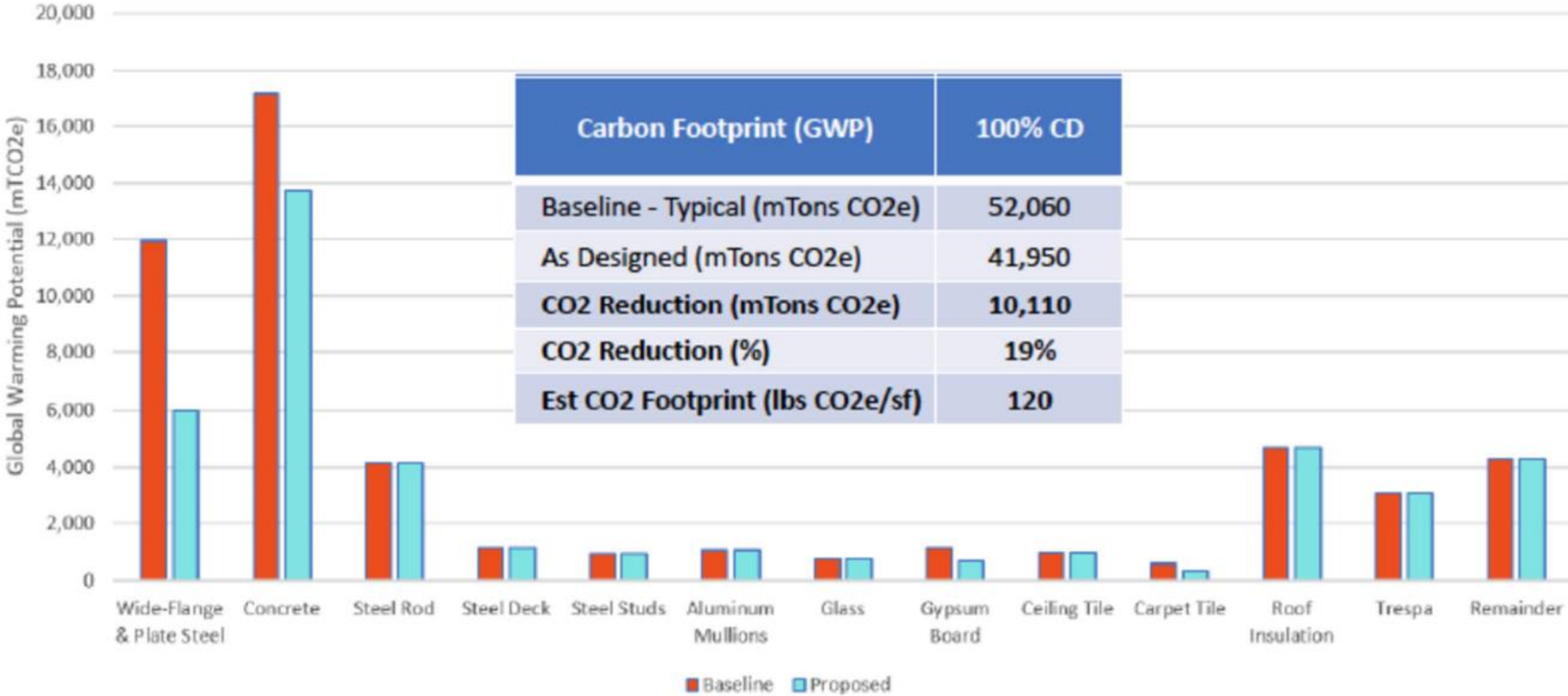
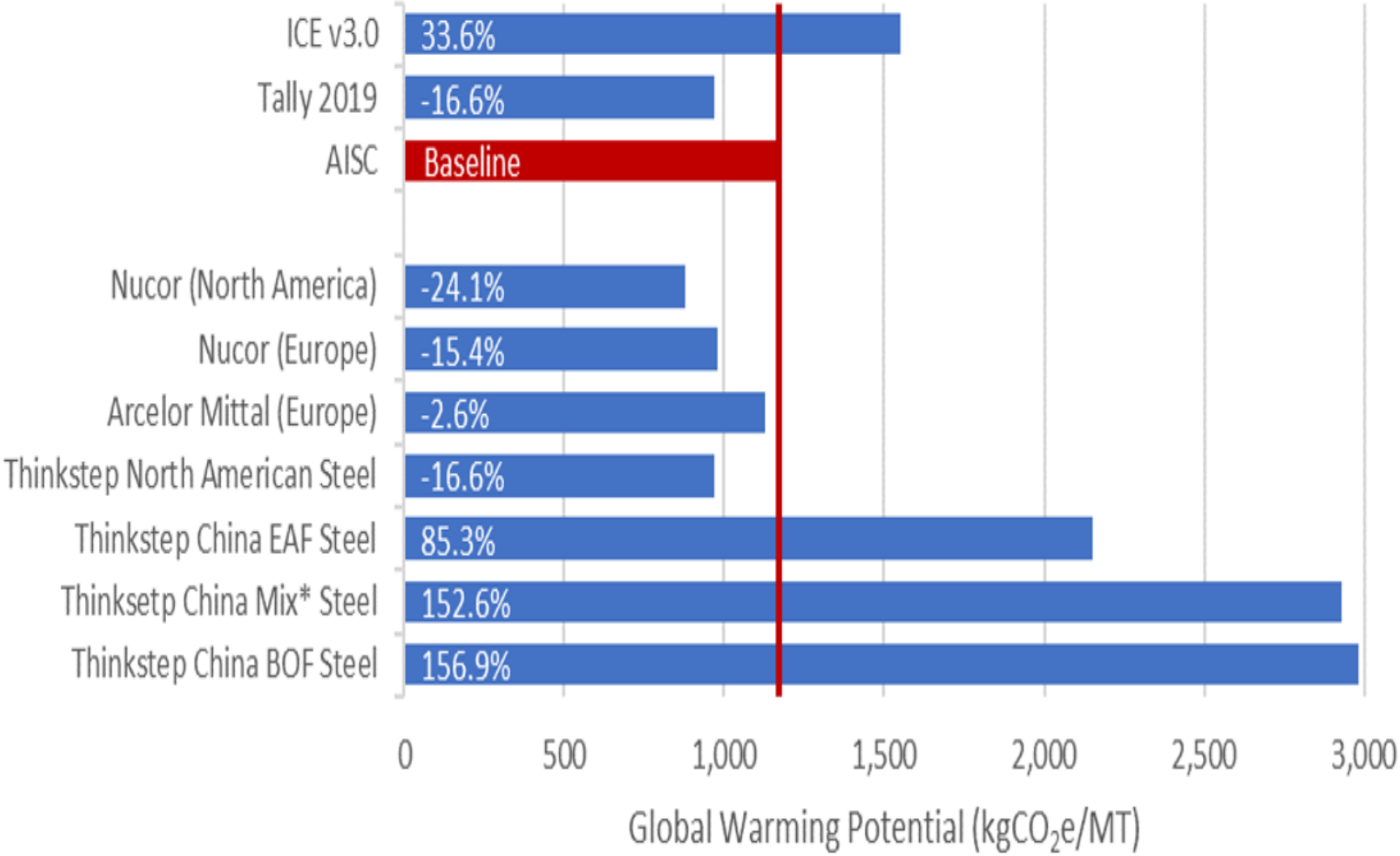
- Gradual increase in reuse vs. new construction.
- Offset through net-positive production and/or increase in carbon sequestration (capture through absorption).

Baseline vs. Proposed GWP Per Product Category

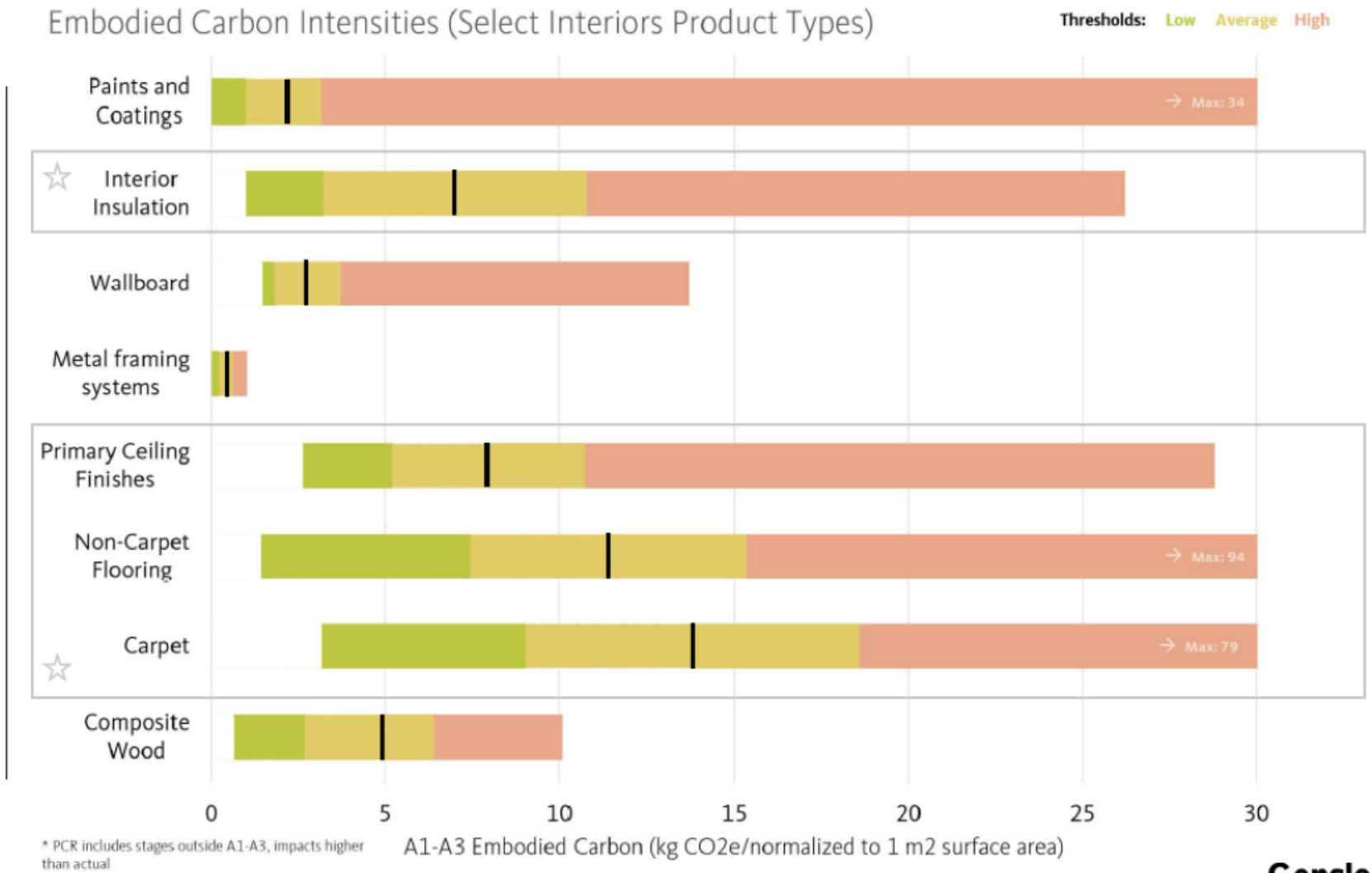


Carbon Footprint (GWP)	100% CD
Baseline - Typical (mTons CO2e)	52,060
As Designed (mTons CO2e)	41,950
CO2 Reduction (mTons CO2e)	**10,110**
CO2 Reduction (%)	**19%**
Est CO2 Footprint (lbs CO2e/sf)	**120**

Structural Steel – North American vs Global Production



Product types with **good decision-making opportunity, high average carbon intensity,** and a **wide range of possible outcomes** are our quick wins



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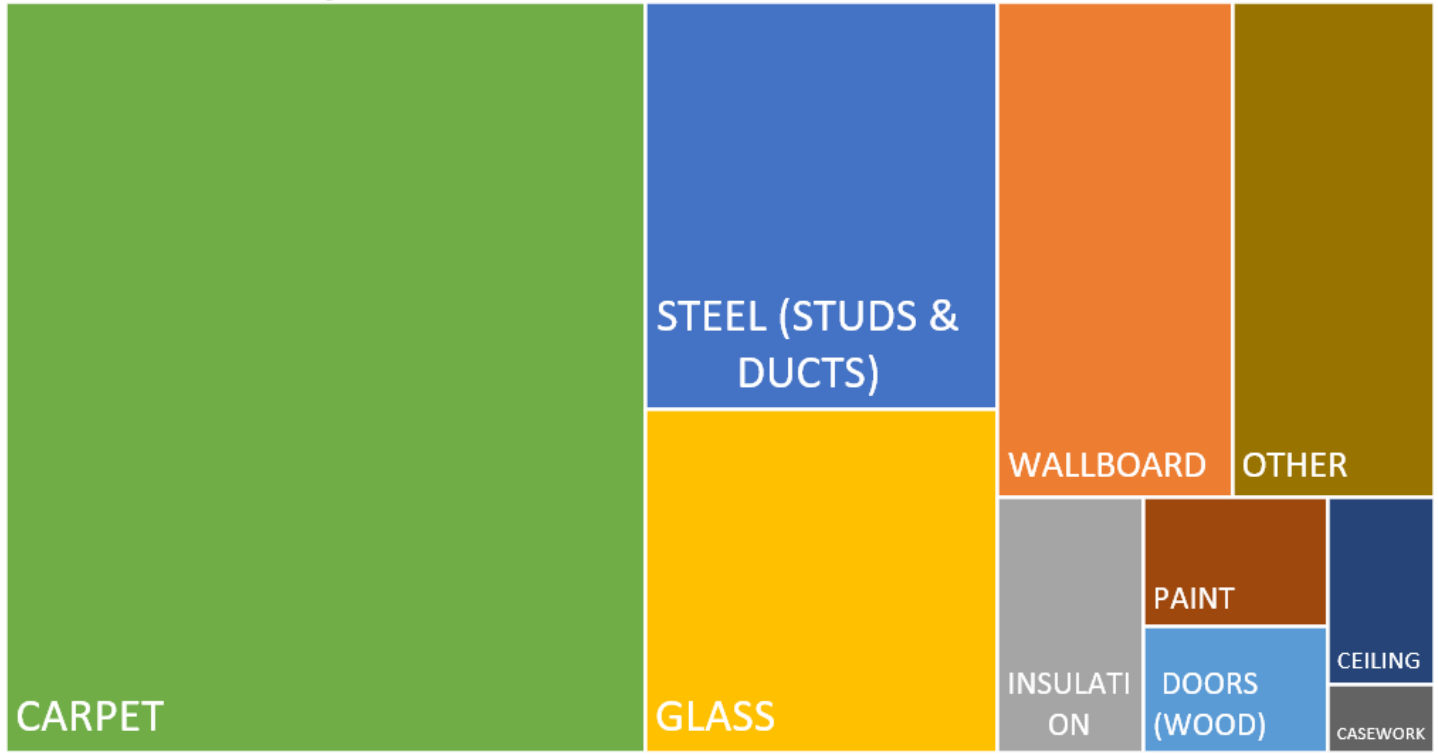
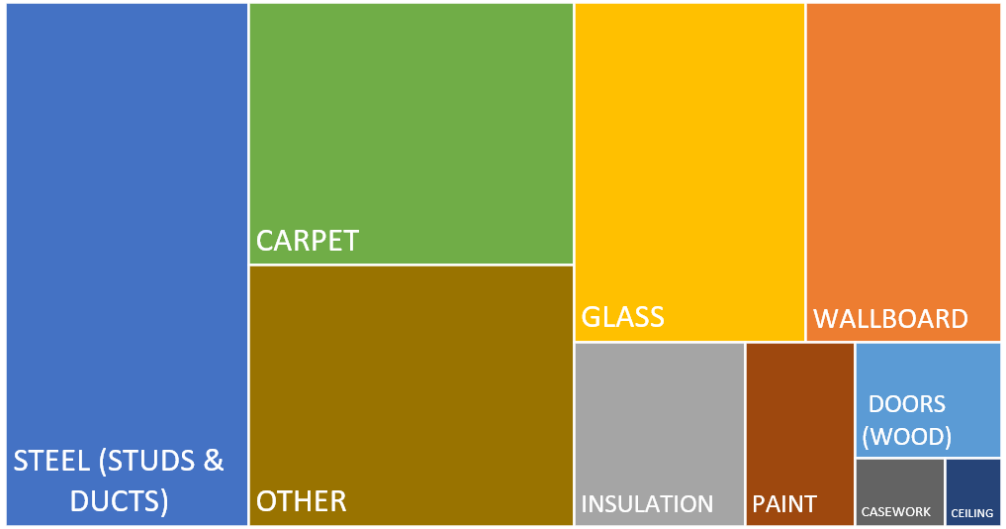
10,000 SF
TENANT FITOUT

Baseline Design
43,000 kg CO2e (10.9 lbs CO2e/sf)



Final Design
24,000 kg CO2e
(5.72 lbs CO2e/sf)
43% Reduction!



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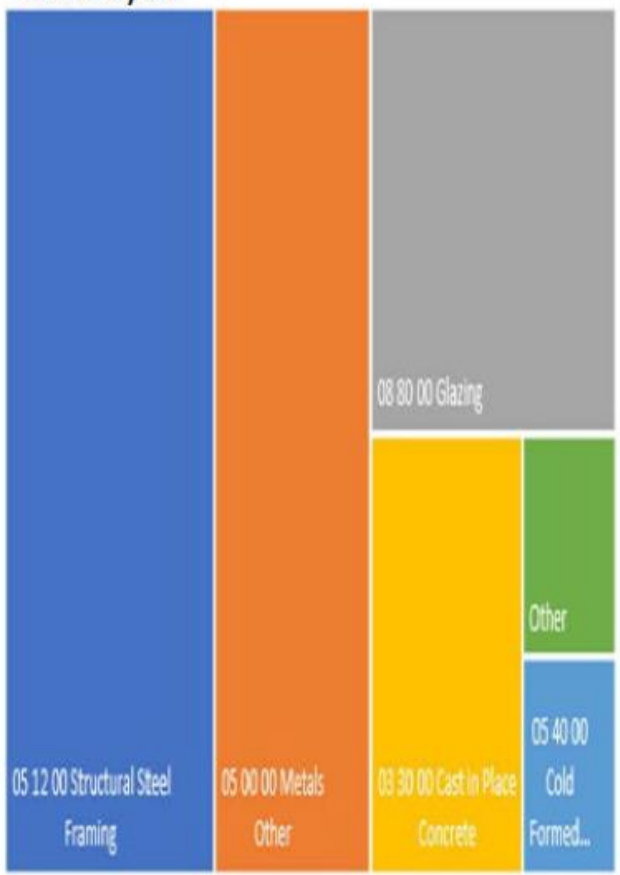
MODULAR CONSTUCTION // CITIZEN M HOTEL SEATTLE, WA

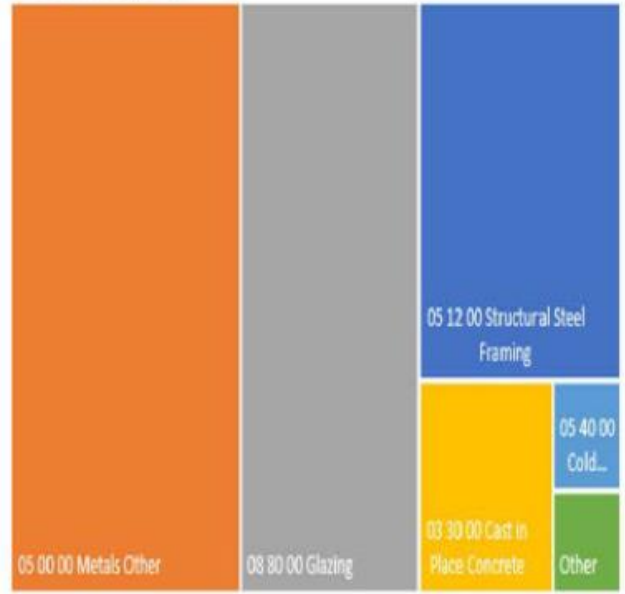
LA CONFIDENTIAL
CARBON FOOTPRINT STUDY – ADPATIVE REUSE

Ground Up Baseline, 218 lbs CO2e/sf



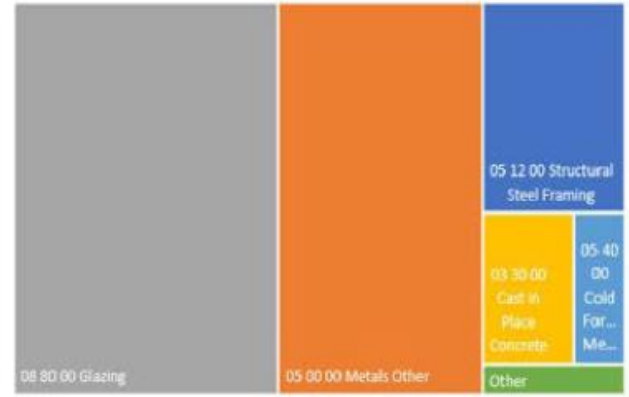
33% Embodied Carbon Reduction

Adaptive Reuse Baseline, 148 lbs CO2e/sf



54% Embodied Carbon Reduction

Adaptive Reuse Optimized, 100 lbs CO2e/sf



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CARBON OFFSETS

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TOTAL NET CARBON IMPACT

We created a net-positive, visual social hub. Our approach to the new Administrative Building supports their rapidly growing campus. Integrated energy and water submeters monitor the building's NZE performance throughout operations and occupancy. The net-positive water strategy utilizes gray water for all non-potable uses, while rainwater management strategies feature rain chains and on-site bioswales.

The "solar veil" canopy hosts an 89 kWh photovoltaic array that naturally shades the courtyard, reducing heat island effect as well as solar heat gain.

Upcycled brick, salvaged from demolition, lowers the demand for virgin materials, reducing embodied carbon emissions.

Sister-buildings are organized around a shared courtyard, which minimizes the floor plates and increases daylighting opportunities.

ADMINISTRATION BUILDING

111% of building needs are provided by on-site renewables.

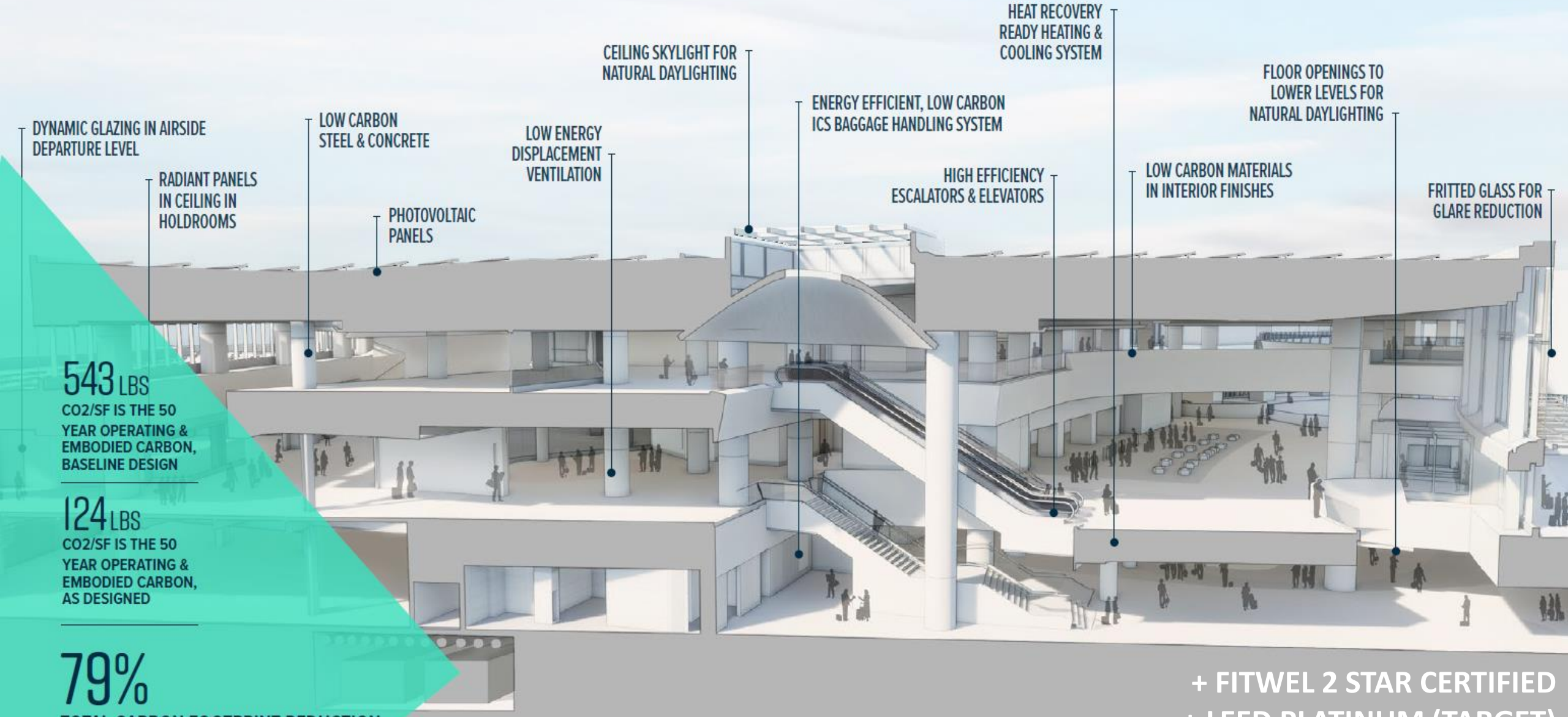
We reduced energy demands through strategic orientation and massing. The occupied spaces of the Housing building are organized along East-West axes, reducing heat gain by 71%. To support our net-positive energy strategy, we specified high-performing, low-wattage site lighting and maximized indirect lighting strategies at the interior. HVAC fan coils are controlled by occupancy sensors, minimizing energy loads while spaces are unoccupied.

Operable windows reduce energy demands, while state-of-the-art mechanical systems are paired with a 76 kWh photovoltaic array.

Utilizing reclaimed water saves over 898,000 gallons annually, with reciprocal energy reductions for water conveyance (not pictured).

PARKSIDE HOUSING NORTH

107% of building needs are provided by on-site renewables.



543 LBS
CO2/SF IS THE 50 YEAR OPERATING & EMBODIED CARBON, BASELINE DESIGN

124 LBS
CO2/SF IS THE 50 YEAR OPERATING & EMBODIED CARBON, AS DESIGNED

79%
TOTAL CARBON FOOTPRINT REDUCTION

+ FITWEL 2 STAR CERTIFIED
+ LEED PLATINUM (TARGET)

SFO TERMINAL 1 // SAN FRANCISCO, CA

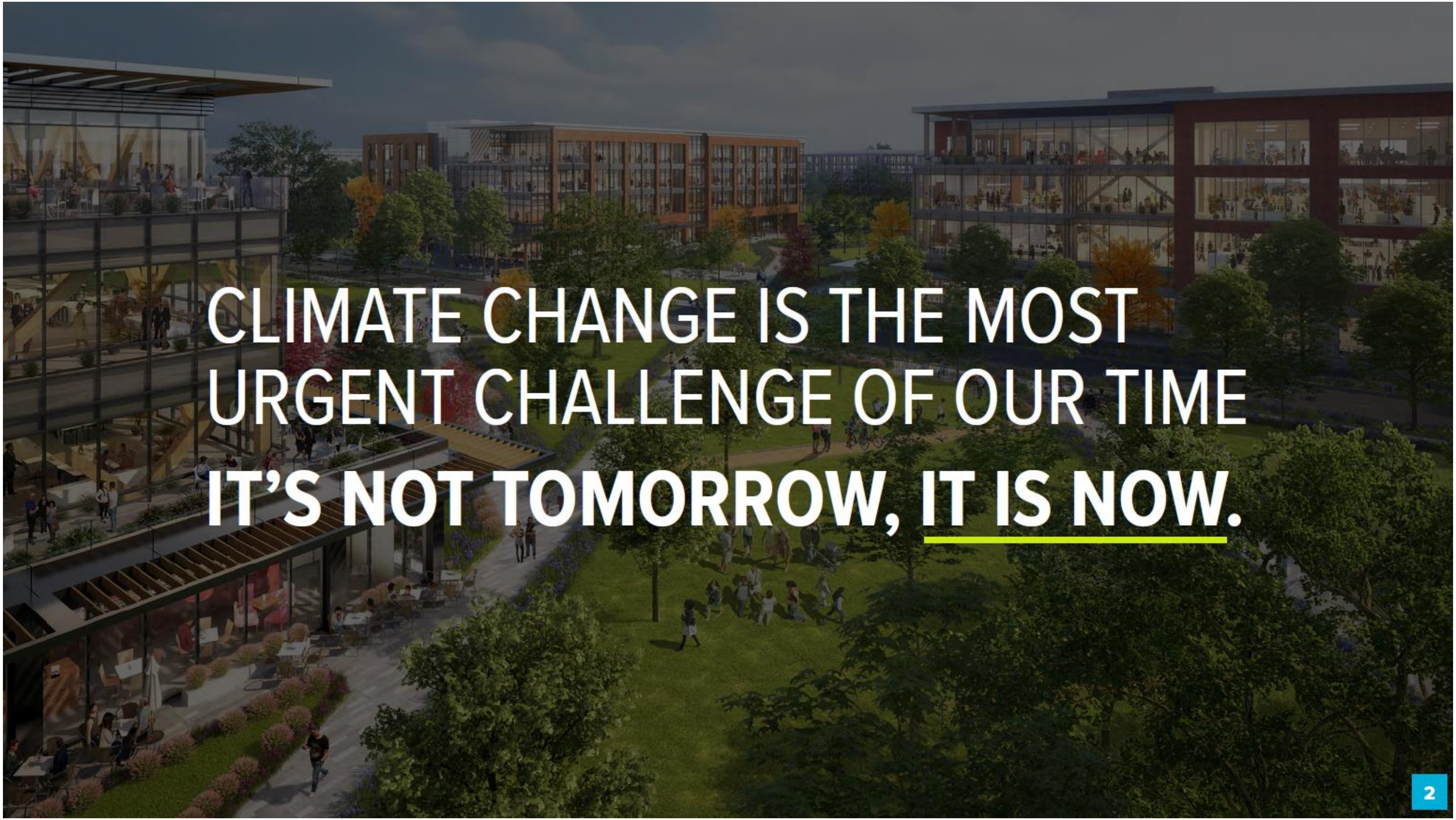
Gensler

Case Study: NGA St Louis

2030 Operational Targets

- Net Zero Energy via Reduction & Onsite Renewables
- Net Zero Water via Reduction & Onsite Collections
- Net Zero Waste via Reduction & Onsite Renewables
- Carbon Footprint: Concrete Life Cycle Assessment

- Case Study: NGA St Louis


CLIMATE CHANGE IS THE MOST
URGENT CHALLENGE OF OUR TIME
IT'S NOT TOMORROW, IT IS NOW.

Rives Taylor
Co-Director Design Resilience Leader
Rives_Taylor@gensler.com

Climate Action Through Design 2021: Climate & Resilience

ARTICLES FROM GENSLER'S RESPONSE TO A CARBON CHALLENGED WORLD

Doubling Down on Our Commitment to Resilience

Impact by Design 2020: Climate & Resilience

Will There Be a Climate Change Vaccine?

What's Old is New Again: Navigating the Circular Economy