



Transparent Insulation™

LuxWall Transparent Insulation

LuxWall Transparent Insulation enables high-performance retrofits that transform existing windows into energy-efficient building envelopes.



Fiberglass Insulation. R-18.



LuxWall Enthernal. R-18.

The New Path. Windows That Insulate Like Walls

Transparent Insulation scienced with vacuum insulation technology

R-1 to R-4 → R-18

Center-of-glass R-value, ASTM C518 third-party validated



A vacuum stops heat in its tracks

The same principle as a Thermos® bottle: with no molecules in the cavity, conductive, convective and radiative heat transfer stop.



5× the insulating power of a standard window

R-18 against the R-1 to R-4 of conventional glazing, in the same daylight opening enabling windows to insulate like walls..



Up to 50% less HVAC energy

Lower heating and cooling demand cuts OpEx while occupants get warmer winters and cooler summers with reduced drafts.



See The Proof

Property: 1250 Broadway, New York, New York

Owner: Global Holdings Management Group

LuxWall Retrofit: Reduced YoY energy costs, retained anchor tenant by resolving comfort complaints, achieved Local Law 97 compliance

65%
Glazing CapEx Savings before utility incentives

30%
Whole Building Energy Savings

8 kwh/ft²
Energy Savings per Usable Floor Space

\$2.92
Cost per ft² Floor Space with incentive

12
Week install and no tenant displacement

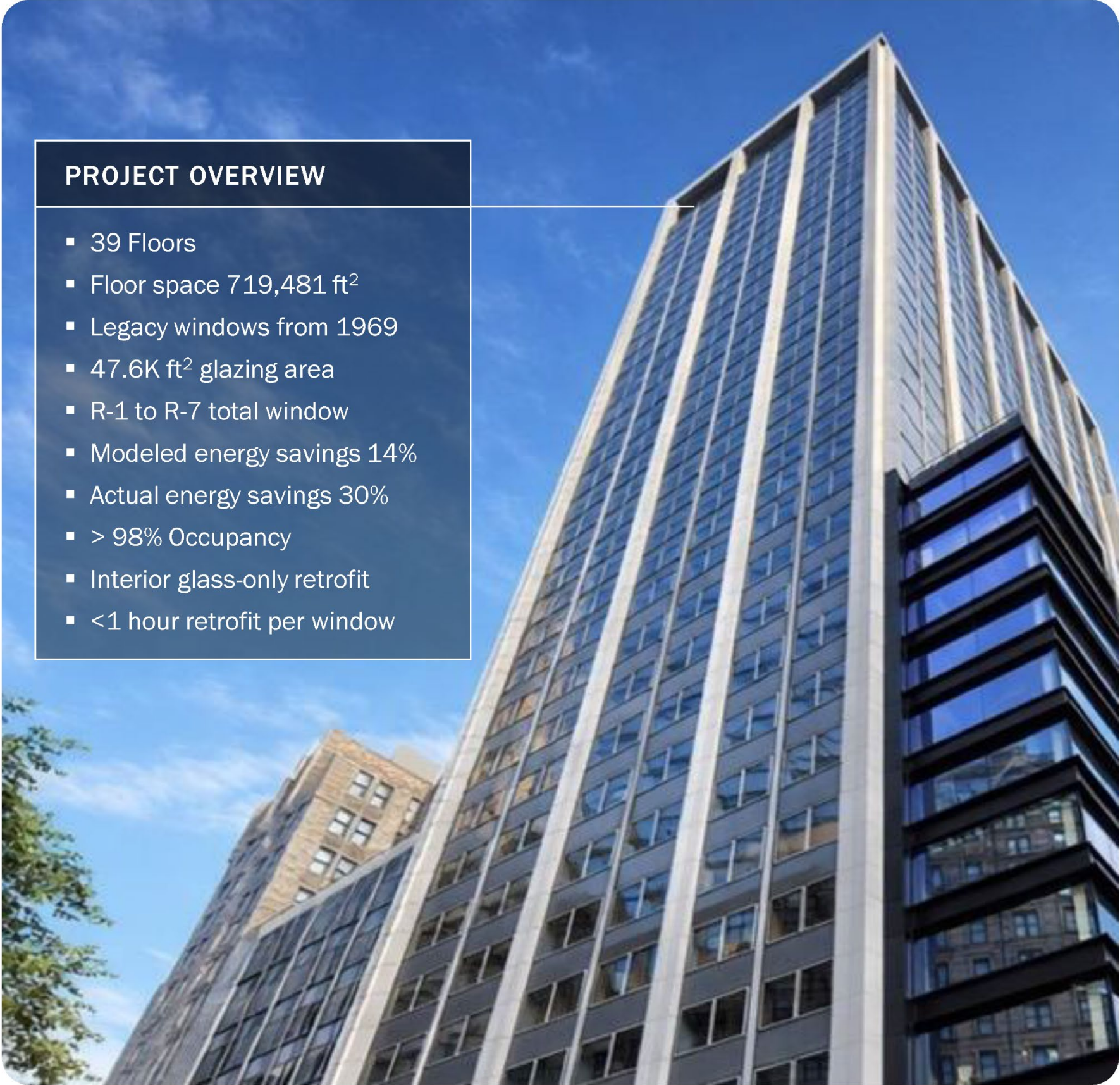
3.2
Year Payback with ConEd incentive

	Full Window Replacement	LuxWall Glass-Only Retrofit
Glazing Cost per ft ²	\$214	\$74
Glazing CAPEX	\$10.2M	\$3.5M / \$2.1M
Owner ROI	3%	19% / 31%

Glazing CAPEX and Owner ROI (no ConEd incentive / with ConEd incentive)

PROJECT OVERVIEW

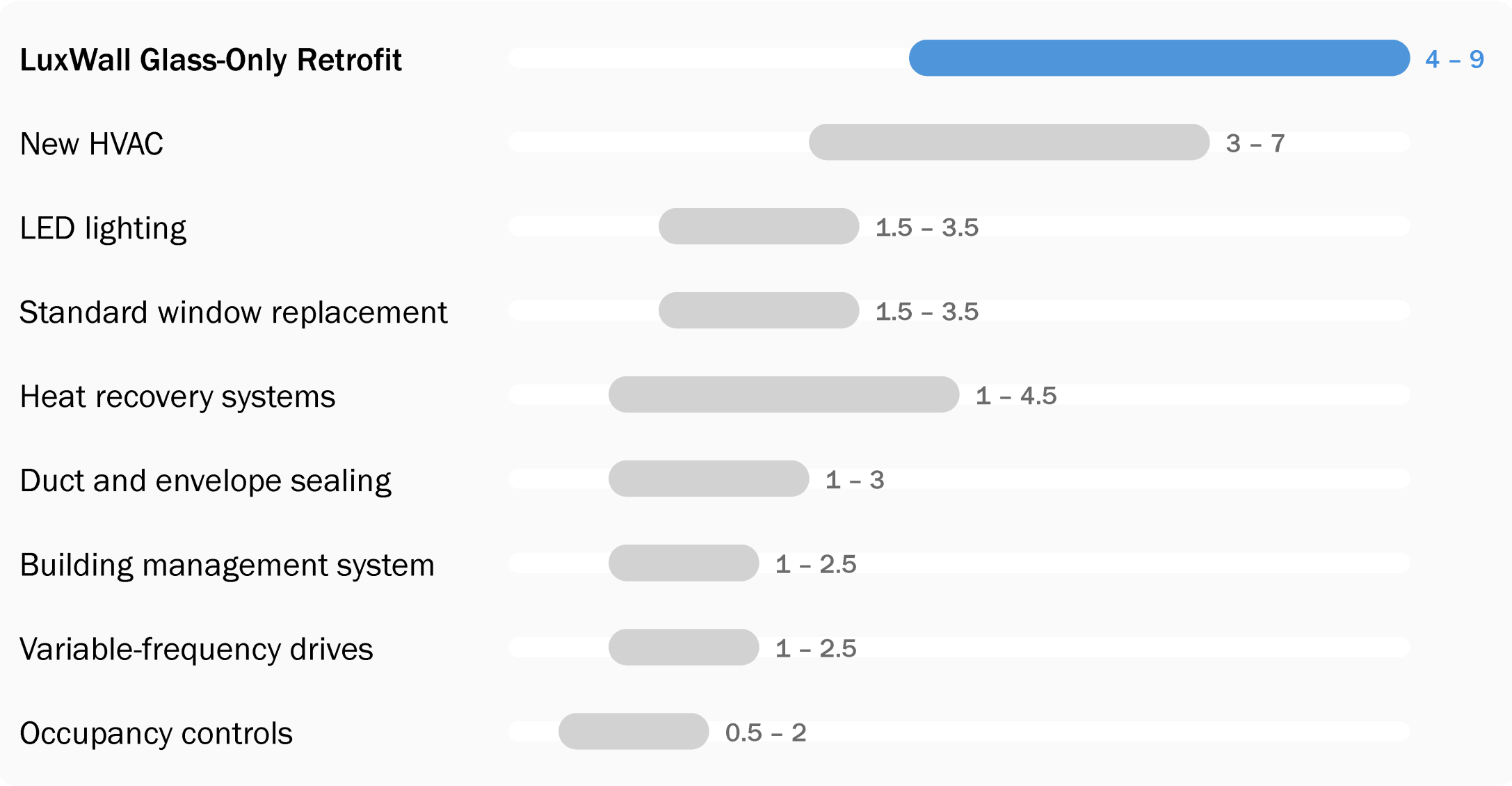
- 39 Floors
- Floor space 719,481 ft²
- Legacy windows from 1969
- 47.6K ft² glazing area
- R-1 to R-7 total window
- Modeled energy savings 14%
- Actual energy savings 30%
- > 98% Occupancy
- Interior glass-only retrofit
- <1 hour retrofit per window



Shrink The Load Before It Reaches The HVAC

LuxWall is an energy efficiency upgrade AND an upstream load-reduction measure.

TYPICAL ANNUAL SAVINGS · KWH PER FT² OF FLOOR SPACE PER YEAR



It moves four loads at once

Heating, cooling, ventilation and peak demand all fall when the window goes from R-1 to R-18.



Equipment can be downsized

Smaller loads mean smaller HVAC at the next replacement plus the annual savings.



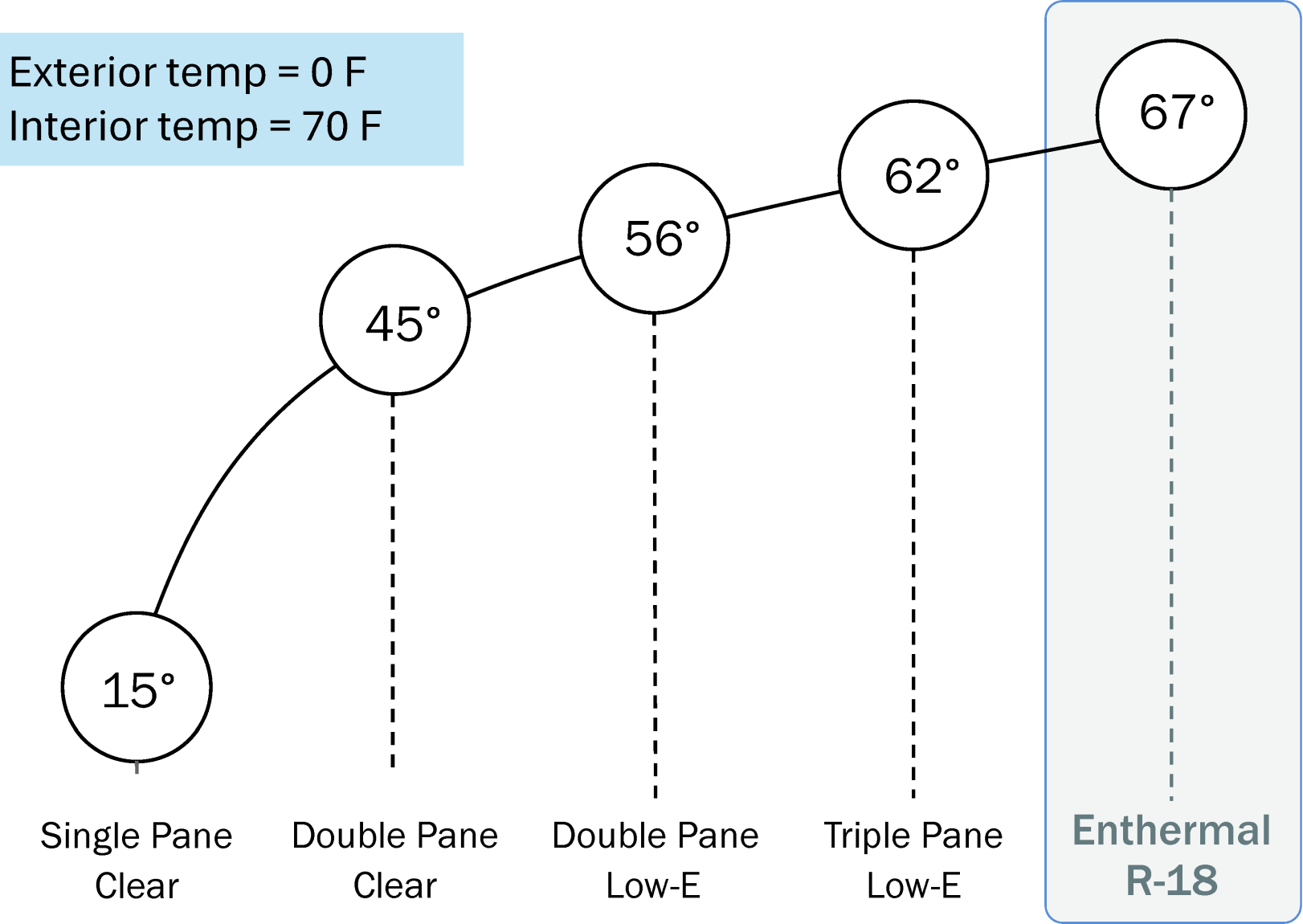
Highest NOI impact per ft²

4 – 9 kWh/ft²-yearr against 1.5 – 3.5 for a standard window replacement.

Source: US EIA 2025. US DOE. LuxWall Data.

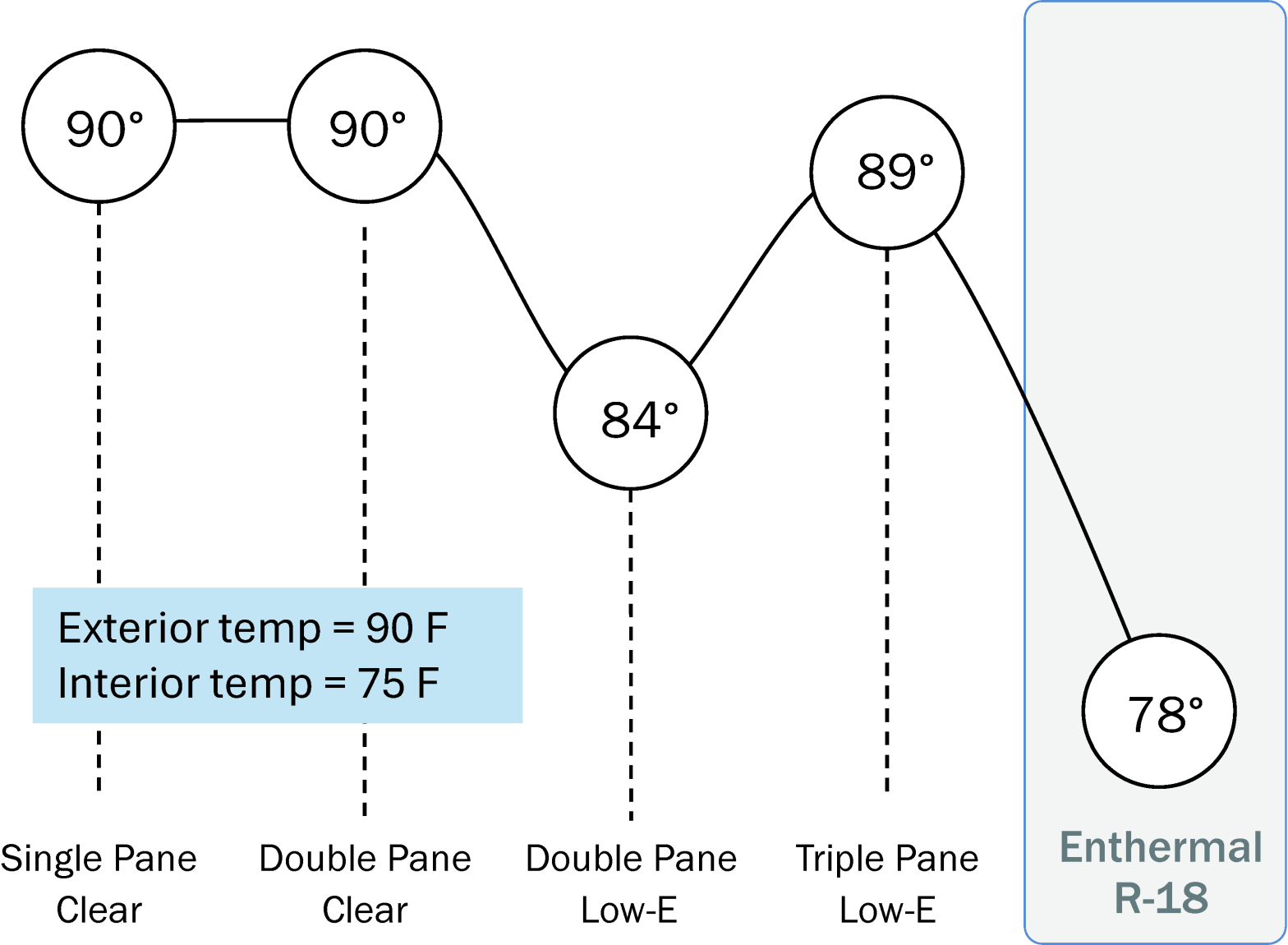
Highest Comfort with the Lowest Energy Cost

Winter Interior Glass Surface Temperature (°F)



Warmest interior winter temperatures

Summer Interior Glass Surface Temperature (°F)



Coollest interior summer temperatures

Enthermal



R-18

Center of Glass
Triple Silver Low-E

77

Condensation
Resistance Factor

30-32

Outside Inside
Transmission Class

8 to 12-mm

Enthermal
Thickness

4.1 kg/ft²

Embodied Carbon
Emissions

20-Year

Product
Warranty

5-mm/5-mm	Visible Light Transmittance	Exterior Reflectance	Fading UV	Fading ISO	SHGC COG	R-value COG	U-factor COG
1-Ag Low-E	78%	15%	26%	61	0.62	12	0.084
2-Ag Low-E	69%	12%	13%	50	0.35	16	0.062
3-Ag Low-E	64%	11%	5%	42	0.26	18	0.055

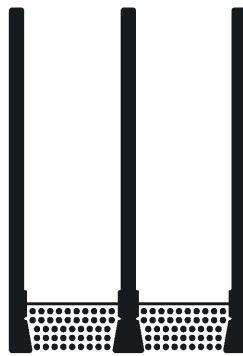
Thinner. Lighter. Highest R-value.



Double Pane



Thin Triple



Triple Pane



Enthermal



Enthermal Plus

4-mm Glass Thickness	One Low-E	Two Low-E	Two Low-E	One Low-E	Two Low-E
Unit Thickness	25-mm	25-mm	44-mm	8 to 12-mm	25-mm
Unit Weight (lbs. per ft ²)	4	6	6	4	6
U-factor COG (W/m ² K)	1.4	1.1	0.7	0.3	0.2
U-factor COG (BTU/hrft ² F)	0.251	0.190	0.119	0.055	0.043
R-value COG (hrft ² F/BTU)	3.98	5.26	8.40	18.00	23.00
Visible Light Transmission	63%	46%	46%	63%	46%
SHGC	0.26	0.23	0.23	0.26	0.23

Pay Back Embodied Carbon In Months, Not Decades

133 : 1

LIFETIME CARBON RETURN

30-yr avoided emissions ÷ embodied carbon (545 kg CO₂e/ft²)

< 2.5 months

CARBON PAYBACK

vs. 14–17 years for double- to triple-glazing (Glass for Europe)

EMBODIED CARBON	VS. LUXWALL
LuxWall Entermal 10 mm (R-18)	Baseline
Double-pane tempered IGU (R-4)	+40%
Triple-pane tempered IGU (R-7)	+140%
Aluminum window, double-pane IGU	+280%
Aluminum window, triple-pane IGU	+380%

CIRCULARITY & MATERIALS

- >20% recycled glass cullet content in Entermal
- 100% recyclable at end of life via separability
- No toxic substances or materials

ENERGY PERFORMANCE

40–50%

EUI reduction

Single-pane retrofit

30–40%

EUI reduction

Double-pane retrofit

25–35%

Whole-building energy

Single-pane retrofit

20–30%

Whole-building energy

Double-pane retrofit

OPERATING CO₂ REDUCTION

45–60%

Scope 1

On-site fuel

15–20%

Scope 2

Purchased electricity

25–35%

Total

Annual carbon



Embodied carbon modules A1–A5, B1, C1–C4; glass-only retrofit where possible, aluminum options are full replacement. Scope 2 uses a declining U.S. grid factor (Ember 2024).

Deployed At Scale Across Every Building Type

From 1K to 105K ft² projects in under two years: office, multifamily, healthcare, education, retail,...

470+ projects 50K+ Enthermal units 800K+ Enthermal ft² 45 states / provinces 14 countries



Office – New York, NY



Office – New York, NY



Office – Boston, MA



Multifamily – New York, NY



Multifamily – New York, NY



Hospitality – New York, NY



Healthcare – Englewood, CO



Multifamily – Toronto, Ontario



Office – Geneva, Switzerland



Public Sector – Hartford, CT



Education – Toledo, OH



Education – Boulder, CO



Office – Boise, ID



Office – Lakewood, CO



Education – Providence, RI



State Capitol – Nashville, TN



Public Sector – Nashville, TN



Retail – Loveland, CO

LuxWall Has Passed Exhaustive, Accelerated Testing Protocols

20 YEAR WARRANTY
- Includes thermal performance
40-YEAR USEFUL LIFE

LuxWall Durability	100% or Test Standard	200% Test Level	LuxWall Durability & Certifications	100% or Test Standard	Industry Durability & Certifications	100% or Test Standard
Thermal Cycling (-60 C/+130 C)	☑	☑	ND & FL 20-year Accelerated	☑	ASTM 2188/2189 IGU Certs	☑
Damp Heat (85% RH / 85C)	☑	☑	32X Accelerated UV 114-days	☑	EN 1279:1-5 IGU Certs	☑
H ₂ O : pH 3.5 : pH 10 Immersion	☑	☑	ANSI Z97.1 Safety Impact	☑	ASTM 2264 Thermal Cycling	☑
WI + TC + DH + ATS (+/- 70C)	☑	☑	ASTM C518 U-factor Certs	☑	ASTM B117 Salt Spray	☑
DH + TC + WI + ATS (+/- 70C)	☑	☑	AAMA 1503 Condensation	☑	ASTM E330 Static Pressure	☑
TC + DH+ WI + ATS (+/- 70C)	☑	☑	AAMA 910 25K Door Slams	☑	ASTM E1996 Dynamic Pressure	☑
Asymmetric Thermal (+/- 90C)	☑	☑	ASCE IBR Point and Uniform Load	☑	Large Area Edge Seal Shear	☑
Thermal Cycle w/Water Spray	☑	☑	ASTM E90-09 Acoustics	☑	SGCC VIGT Certification	☑
Humidity Freeze Cycling	☑	☑	EN 1036-1 Water Condensation	☑	IGCC/IGMA Certification	☑
EN 9227 Neutral Salt Solution + CASS	☑	☑	ISO 19916-1:2018 VIG Unit	☑	CE Marking (Enthermal)	☑

First AIA Course on Transparent Insulation

LW-001 | 1 LU Credit | CES Provider No. 10158306

Scan the QR code to request an in-person session on
Transparent Insulation and receive 1 LU credit.

Get in touch:

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