

CASE STUDY:
THERMAL OPTICAL WINDOW INSERT

CHANIN BUILDING



LOCATION

122 East 42nd St., NY, NY

BUILDING

A 750,000 square foot, 56 story, Nationally Registered Historic Landmark commercial office building built in 1929.

UTILITY

The building utilizes electricity and district steam with cooling towers, steam-to-water heat exchangers, air handling units (AHUs) and baseboard heating units to provide heating and cooling via (2) 600-ton steam driven absorption chillers and (3) 200-ton modular electric scroll chillers to provide chilled water to the building's AHUs and the 1950s era cooling towers provide the required heat rejection for the chillers.

PROJECT DESCRIPTION

In December of 2023, IEG, a ConEdison Participating Contractor, completed installation of 2,600 custom sized thermal optical window inserts directly onto the interior of the existing glass and frames of the buildings 2,190 windows with the intent to reduce infiltration while simultaneously improving the thermal and transmittance characteristics of the window assemblies, resulting in significant energy savings from reduced cooling load in the summer, less heating needed in the winter, street noise reduction and increased occupant comfort.

CONTACT

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Thermal Optical Window Insert U.S Patent No. US11,933,102 | U.S. Patent No. US12,523,087

TRANSPARENT INSULATION TECHNOLOGY BY STATE™

IMPROVING THE FACADE WITHOUT SACRIFICING THE VIEW

ANNUAL CONSUMPTION BASELINES

43,007 MLBS OF STEAM

**9,825,517 KWH OF
ELECTRICITY**

PRELIMINARY
INCENTIVE

\$1,100,000

POST INSTALL
INCENTIVE

\$1,650,000

PERFORMANCE
BASED INCENTIVE
INCREASE

33%

POST INSTALL
ANNUAL BILL
SAVINGS

\$271,282

LL97 ANNUAL PENALTY
REDUCTION THROUGH 2039

\$213,063

1 YEAR POST INSTALL PERFORMANCE SUMMARY



37% Heating Season Steam Reduction despite a 31% \$/MLB cost increase and a 4.8% increase in the number of seasonal degree days, resulting in \$223,662 Year One Steam Savings

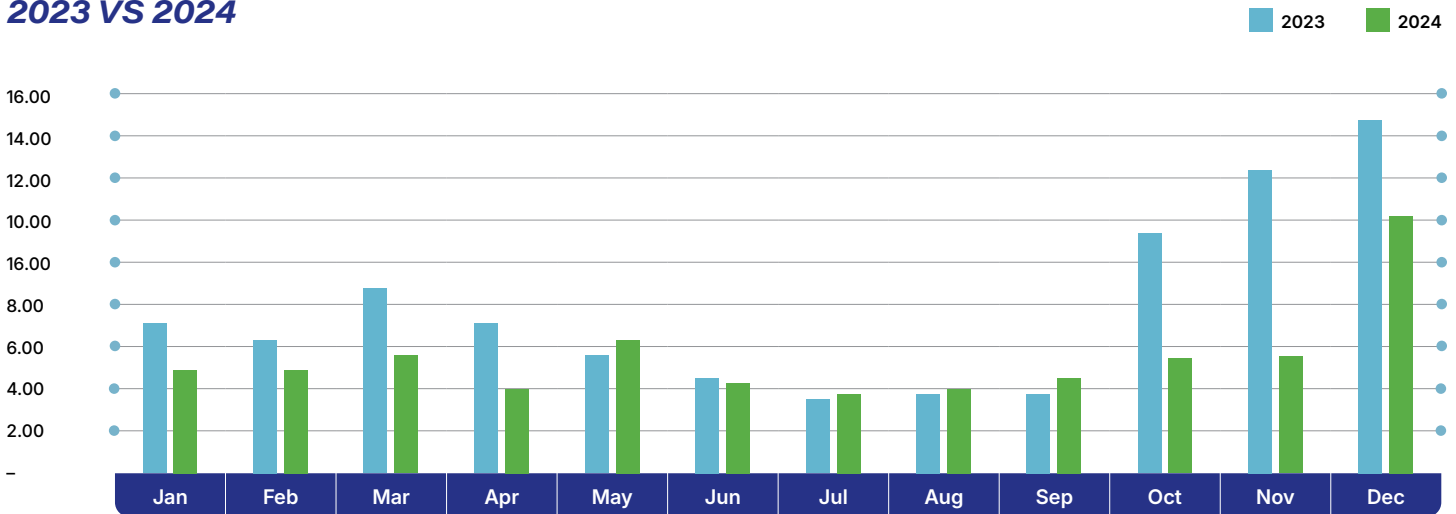


3% Cooling Season Electricity Reduction despite a 4.5% \$/kWh cost increase and a 6.2% increase in the number of seasonal degree days, resulting in \$47,720 Year One Electricity Savings

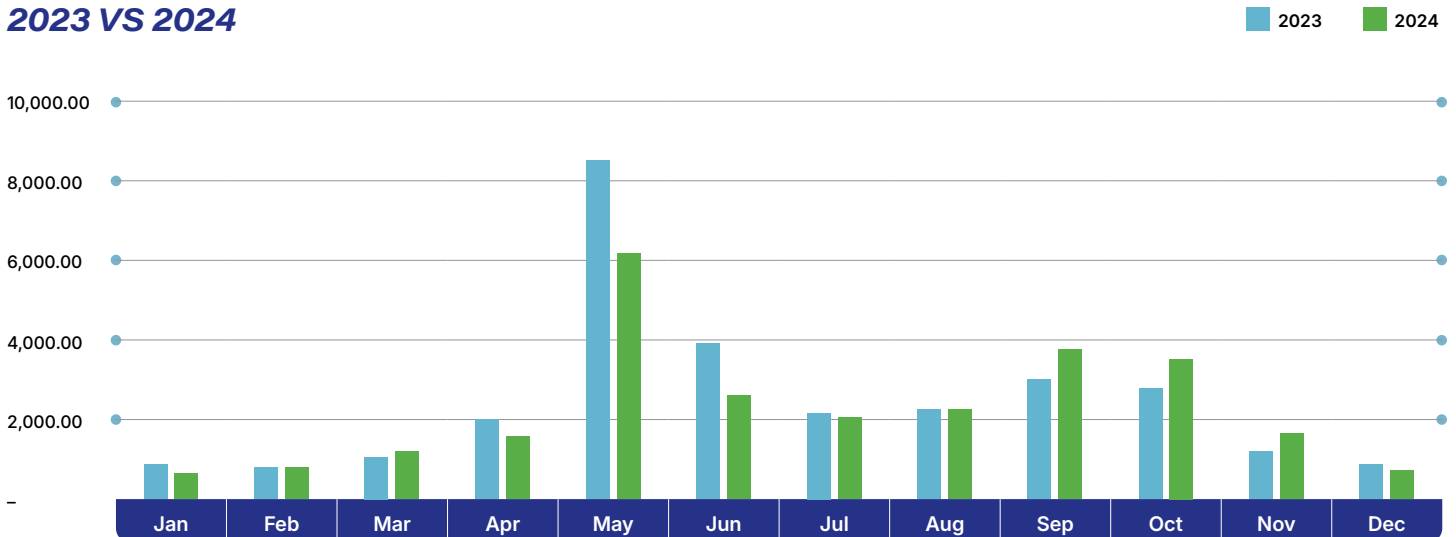
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CHANIN BUILDING

CHANIN MONTHLY STEAM MLB PER DEGREE DAY 2023 VS 2024



CHANIN MONTHLY ELECTRICITY KWH PER DEGREE DAY 2023 VS 2024



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CASE STUDY: THERMAL OPTICAL WINDOW INSERT

777 UNITED NATIONS PLAZA



LOCATION

777 United Nations Plaza, NY, NY

BUILDING

67,177 square foot, 12 story, commercial office building constructed in 1963 with single-pane aluminum frame windows.

UTILITY

The building is served by a down state NY electricity, natural gas and district steam utility. A 300-ton on-site steam-driven, absorption chiller generates chilled water for the building and hot water needs are met by a steam heat exchanger. Additionally, the building is served by a mix of air handlers and fan coil units.

PROJECT DESCRIPTION

In June of 2022, IEG completed installation of 296 custom sized thermal optical window inserts directly onto the interior of the existing glass and frame in floors 2 through 12 of the building with the intent to reduce infiltration while simultaneously improving the thermal and transmittance characteristics of the window assemblies, resulting in significant energy savings from reduced cooling load in the summer, less heating needed in the winter, street noise reduction and increased occupant comfort.

PRE-INSTALL ANNUAL CONSUMPTION BASELINES:

7,302 MLBS OF STEAM

**610,800 KWH OF
ELECTRICITY**

3RD PARTY ENERGY MODEL PREDICTED SAVINGS:

20% STEAM

17% ELECTRICITY

ONE YEAR POST-INSTALL CONSUMPTIONS:

5,257 MLBS OF STEAM

**482,400 KWH OF
ELECTRICITY**

ONE YEAR POST-INSTALL CONSUMPTIONS:

20% STEAM

17% ELECTRICITY

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777 UNITED NATIONS PLAZA



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UTILITY'S PRELIMINARY INCENTIVE OFFER:

\$162,760

ONE YEAR POST M&V ACTUAL INCENTIVE:

\$226,076

1ST YEAR POST INSTALL REALIZED
BILL SAVINGS:

\$57,477

LL97 PENALTY REDUCTION THROUGH 2039:

\$411,680

(Pre and post consumption data compiled
from customer provided utility bills)

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