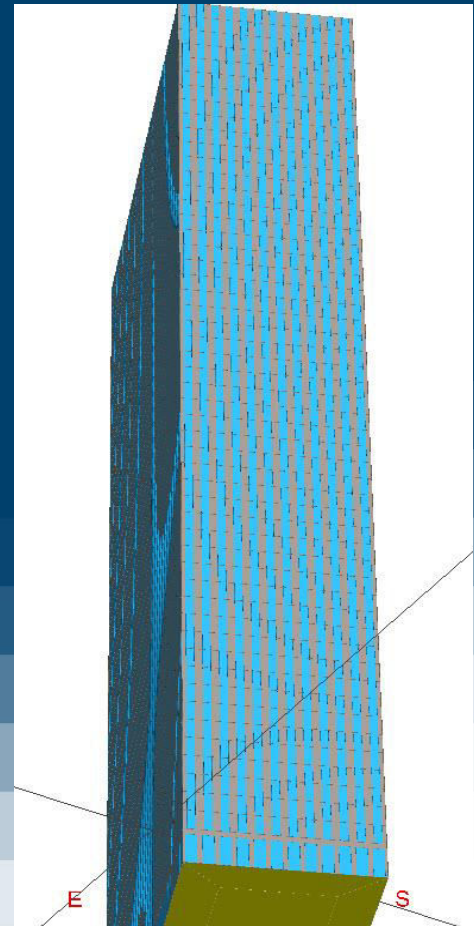


## Case Study Large City Building Modeling



### Comparing TRACE™ 700 results with eQuest



Thermolite created a building model study using the available information about the Exxon Building, more commonly known as 1251 Avenue of the Americas, from the City of New York Building Energy Database to demonstrate the significant energy savings of RetroWAL™ Silver Series interior retrofit window system for large city commercial buildings.

For calculation data, an energy analysis was previously run in eQuest, and to further verify our findings, we re-ran the model simulation using TRACE™ 700. Both of these energy analyses programs function very similarly, with eQuest being more advanced and manual, and TRACE™ 700 being more interactive.



**THERMOLITE**   
WINDOW SYSTEMS

## Methodology:

TRACE™ 700 analysis software was used to calculate the improved thermal performance of the Thermolite retrofit system compared to the existing window and verify it against the building model results calculated by eQuest, another energy analysis software. The baseline building model used a single pane of glass as on an existing building, while the model simulation used the double pane interior retrofit window system from Thermolite. Inputs were kept identical to the previously run eQUEST model, accounting for program user interface variance.

eQuest, technically known as “The Quick Energy Simulation Tool” is an energy analysis tool developed by the Lawrence Berkeley National Laboratory (LBNL). It is funded by the US Department of Energy (DOE) and is free to use as a means of performing detailed building analyses and measuring building performance through an energy efficiency prediction wizard.

*The model was first run using the following factors approximated by Window 6.3 fenestration software and test data:*

- Existing window U Values
- Solar Heat Gain Coefficients (SHGC)
- Air infiltrations

New values using the same software and test data were then placed into the model and rerun with TRACE™ 700 to approximate the energy savings of a window retrofit.

*In this case -*

### Default Single Pane glass:

- U-value = 1.16
- SHGC = .77

### Double – Triple glass:

- U-value= .55
- SHGC= .65

## Results:

### Energy Cost Savings

The results from TRACE™ 700 show a **projected 26.6% energy cost savings** after the installation of Thermolite RetroWAL™ Silver Series behind the New York City base model’s existing single pane window.

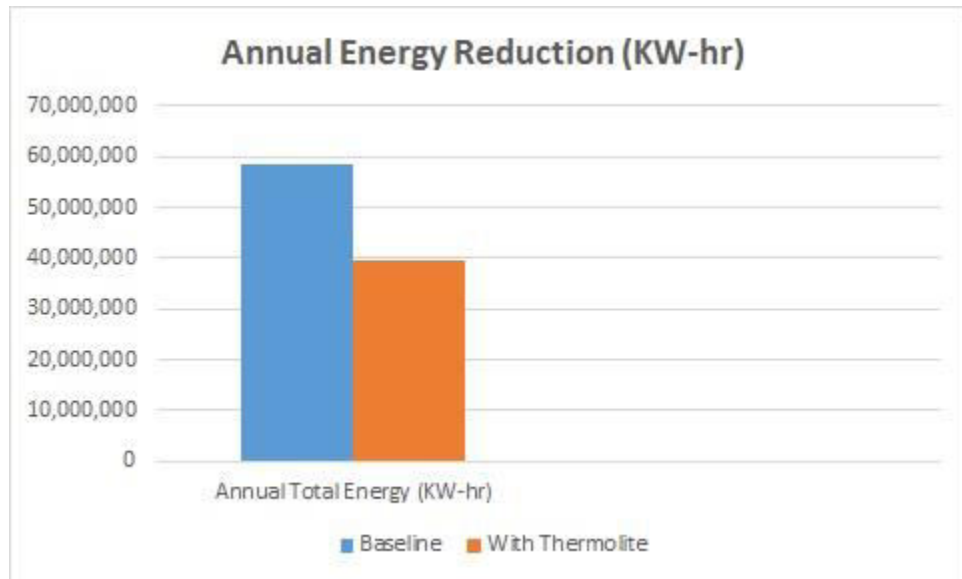
In comparison, the eQuest model simulation showed a **21% energy cost savings** projected by the Energy Utility Index (EUI) of our New York City base model projected after the installation of Thermolite RetroWAL™ Silver Series behind the building’s existing single pane window.



## Energy Reduction

The results from TRACE™ 700 show a **projected 32% energy reduction** after the installation of Thermolite RetroWAL™ Silver Series behind the New York City base model's existing single pane window.

In comparison, the eQuest model simulation showed a **27.7% energy reduction** projected by the Energy Utility Index (EUI) of our New York City base model projected after the installation of Thermolite RetroWAL™ Silver Series behind the building's existing single pane window.



## Conclusion:

The building model energy analyses varied somewhat in their specific findings; however, both eQuest and TRACE™ 700 projected significant savings for large city buildings that are upgraded from single pane windows to Thermolite's interior curtain wall retrofit system RetroWAL™ Silver Series. Retrofit glass technology mainly addresses thermal performance and air infiltration levels, which allow for better temperature control and reduced thermal load, leading to energy reduction and cost.

*Note: Thermolite used TRACE 700 and eQuest software to create the building model. Certain assumptions were made about the building in our energy analyses. If you like to learn more about how the analyses were performed, please contact Thermolite.*

## Resources:

- [eQuest](#)
- [Trace 700](#)

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