ASSIGNMENT_03

Jinah Oh

FIBERGLASS "KRAFT FACED INSULATION ROLL"

r-value: R-13

price: $19.13/15 in. x 32 in.

https://www.homedepot.com/p/Owens-Corning-R-13-Kraft-Faced-Insulation-Roll-15-in-x-32-ft-RF10/202585857

OPEN-CELL SPRAY FOAM

r-value: R-3.6 (per sq inch)

price: $1.20/sq. ft.

http://www.finehomebuilding.com/2012/01/24/buyers-guide-to-insulation-spray-foam

FOAM BOARD

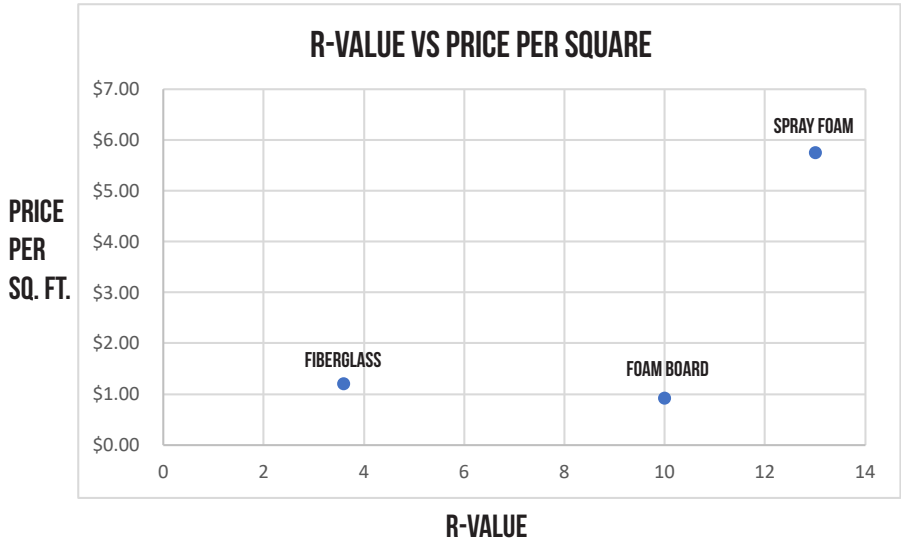
r-value: R-10

price: $29/ 2in. x 48 in. x 8 fts

https://www.homedepot.com/p/Owens-Corning-FOAMULAR-250-2-in-x-48-in-x-8-ft-R-10-Scored-Squared-Edge-Insulation-Sheathing-52DD/202085962

	R-VALUES
FIBERGLASS	13
OPEN CELL SPRAY FOAM	3.6
FOAMBOARD	10

	PRICE PER SQ FOOT
FIBERGLASS	$5.74
OPEN CELL SPRAY FOAM	$1.20
FOAMBOARD	$0.91



CORRELATIONS: At this point, comparing 3 data points makes it quite difficult to draw any reliable conclusion, but perhaps since the data flow overall looks exponential, the correlation is higher price for higher R-value.

WINDOW ASSEMBLIES

SINGLE-HUNG WINDOW

U-value: 0.29
Price: $123

https://www.lowes.com/pd/ThermaStar-by-Pella-Vinyl-Double-Pane-Annealed-Single-Hung-Window-Rough-Opening-36-in-x-48-in-Actual-35-5-in-x-47-5-in/3117803

CASEMENT WINDOW

U-value: 0.27
Price: $362.79

https://www.lowes.com/pd/JELD-WEN-V4500-1-Lite-Vinyl-Double-Pane-Double-Strength-New-Construction-Casement-Window-Rough-Opening-36-in-x-60-in-Actual-35-5-in-x-59-5-in/3722408

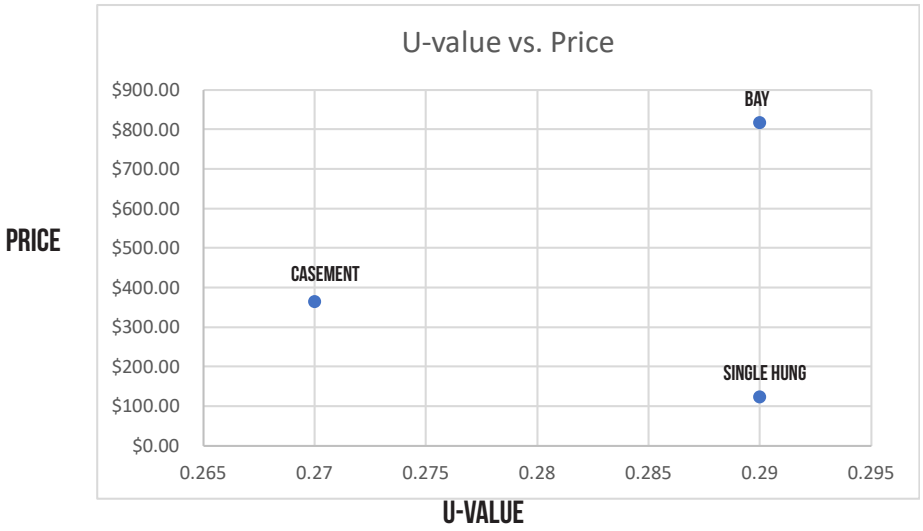
BAY WINDOW

U-value: 0.29
Price: $815.88

https://www.lowes.com/pd/JELD-WEN-V2500-Single-Hung-Vinyl-Double-Pane-Double-Strength-New-Construction-Bay-Window-Rough-Opening-55-938-in-x-49-5-in-Actual-55-438-in-x-49-in/3729931

	U-VALUE
SINGLE HUNG	0.29
CASEMENT	0.27
BAY	0.29

	PRICE
SINGLE HUNG	$123.00
CASEMENT	$362.79
BAY	$815.88



CORRELATIONS: Again, as mentioned above, it is hard to see any sort of correlation of three data points. If I were to make an assumption, the price difference just seems to be based on size of the window and not necessarily the U-value.

RELATIONSHIP: The relationship between center of glass U-value to assembly U-value is that the center of glass U value is only a part of the entire equation that involves the assembly-U factor. The assembly U-factor includes not only the center of glass, but also the edge of the glass and frame. In terms of the center-of-glass value, that is actually the highest performing aspect of the entire window assembly when looking at non-residential window assemblies such as commercial window assembly.

The Lowes website where I found most of the prices and U-value for assembly types did not specify whether the U-value they had was assembly or just the center of glass value--I would like to infer the U-value I found was center of glass due to the typical value being around 0.29 btu/ft^2-hr-F

Assembly U-Factor =
The "area weighted" average thermal transmittance of all components

$$\frac{(U_{FRAME} \cdot Area_{FRAME}) + (U_{EOG} \cdot Area_{EOG}) + (U_{COG} \cdot Area_{COG})}{\text{Total Area}}$$

http://www.wausauwindow.com/resources/education/ufactors/ufactor.pdf