

## ELIZABETH HELDRIDGE

Environmental Systems I  
R-Value and U-Value Study  
11-5-17

### INSULATION TYPE:

#### Rigid Foam Insulation

PRODUCT: FOAMULAR 250 Extruded Polystyrene XPS Rigid Foam Insulation  
COMPANY: OwensCorning

**R-Value: R-5 / inch**

Listed Price: 29\$ for 2"x48"x8' (4,608 in<sup>2</sup>), 32 Board Feet

**Price/Board Foot = \$0.90**

### INSULATION TYPE:

#### Spray Foam Insulation

PRODUCT: Touch n' Foam Professional Spray Foam Polyurethane Insulation  
COMPANY: Touch n' Foam Professional

**R-Value: R-5.4 / inch**

Listed Price: \$349 for 200 Board Feet

**Price/Board Foot = \$1.75**

### INSULATION TYPE:

#### Fiberglass Insulation

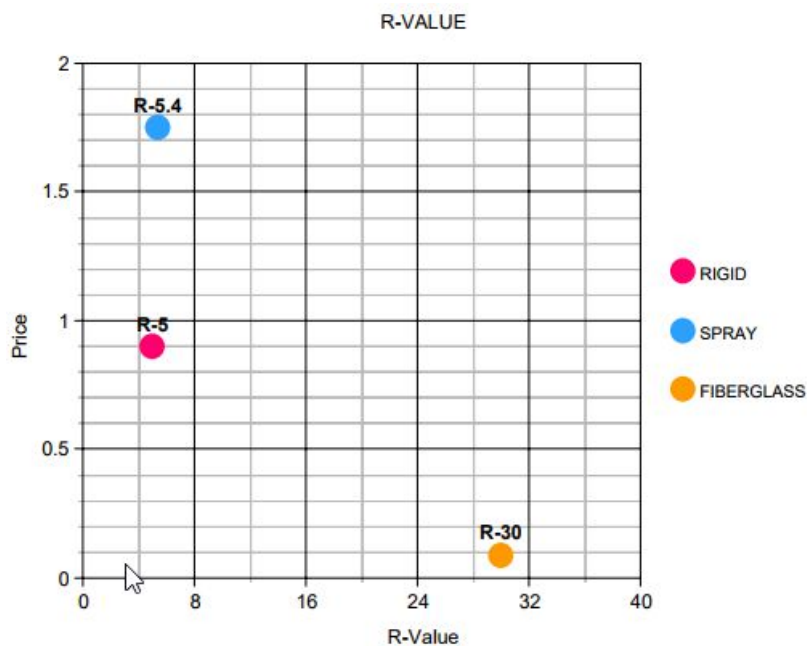
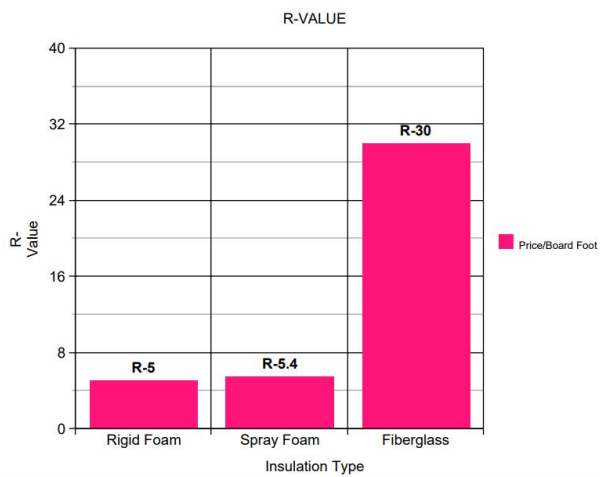
PRODUCT: EcoTouch PINK FIBERGLAS Insulation

COMPANY: OwensCorning

**R-Value: R-30**

Listed Price: \$26.5 for 9.5x15x300 (297 Board Feet)

**Price/Board Foot = \$0.09**



The scatter plot shows clearly that Fiberglass insulation is highly effective for the price unit. However, this type of insulation is also very thick, meaning that it will take up more space in a wall cavity. It is also not suited to exterior use, unlike spray foam or rigid. Spray insulation is pricier, but more durable.

### INSULATION TYPE:

#### Spray Foam Insulation

UNIT TYPE:

**Fixed Skylight**

PRODUCT: Fixed Pan-Flashed Skylight  
with Tempered Low-E3 Glass

COMPANY: Velux

**U-Value: 0.44**

Listed Price: \$289 / unit

Dimension: 22.5"x46.5", 1046 in<sup>2</sup>

**Price / Square Inch = \$0.27**

UNIT TYPE:

**Fixed Picture Window**

PRODUCT: V-4500 Series Fixed Picture  
Vinyl Window

COMPANY: Jeld-Wen

**U-Value: 0.26**

Listed Price: \$118 / unit

Dimension: 30"x30", 900in<sup>2</sup>

**Price / Square Inch = \$0.13**

UNIT TYPE:

**Double Hung Window**

PRODUCT: 70 Series Pro Double Hung  
Vinyl Window

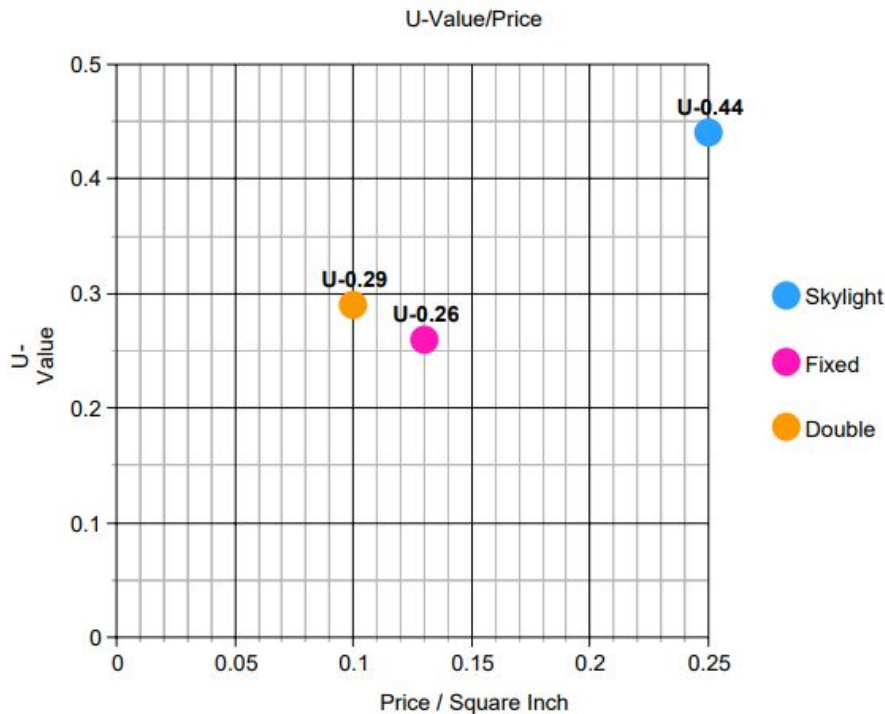
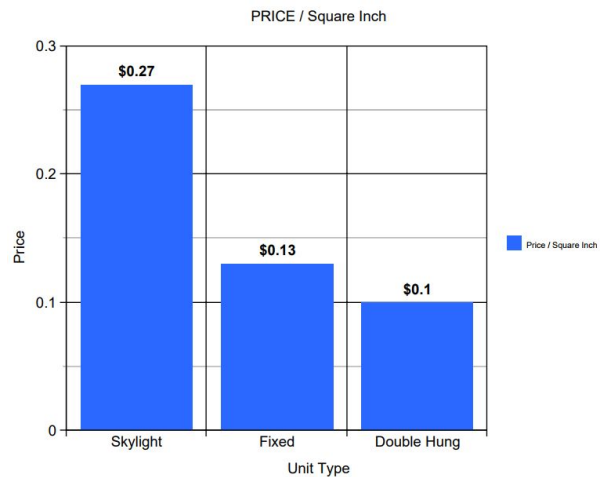
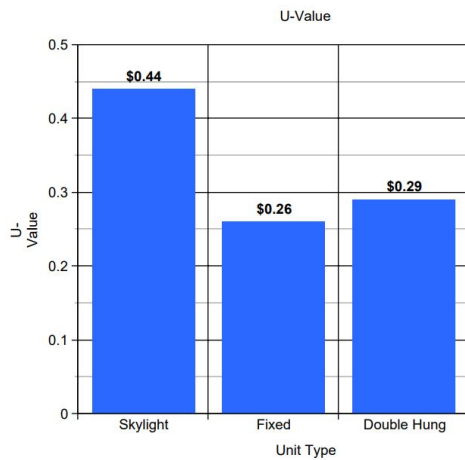
COMPANY: American Craftsman

**U-Value: 0.29**

Listed Price: \$159 / unit

Dimension: 54"x28, 1512 in<sup>2</sup>

**Price / Square Inch = \$0.10**



The Scatter plot shows that a low U-Value, for the lowest price per square inch of glazing can be achieved with the double hung window, however, only a slightly raised price will drop the U-value even further. The main take-away from this exercise is that skylights are both expensive, and typically lower U-value than a wall unit.

Only one U-value was given, no distinction between center of glazing vs. whole unit, so I assume these values are entire unit as that is the industry standard.