

Electrochromic Smart Glass:  
Supplier Comparison Return on Investment Analysis



Screen capture from Wglass demonstrating electrochromic glass in action

In recent years, sustainability in construction has become the focus of how the industry can progress with minimal environmental impact. As sustainability certifications become more desirable, key companies in the construction industry have started to seek greener alternatives to standard building systems. There are many sustainable products that are released, but these products are typically so complex that members of the industry are not familiar with these new systems. One novel piece of technology introduced to the industry is electrochromic glass, or smart glass. Electrochromic glass windows examine sunlight and heat exposure from the surrounding environment and change their opacity to maximize utility of the natural environment and increase indoor environmental quality. This report will determine the feasibility, advantages, and disadvantages of utilizing electrochromic glass windows in commercial construction projects. The primary focus of this report is a Return on Investment (ROI) comparison between three smart glass manufacturers. Currently, there is very limited data on the effectiveness of this technology as it only appeared in the industry in 2010. Through conducting interviews with several smart glass suppliers and material data analysis, the most current implications of electrochromic technology in commercial construction have been compared and analyzed in this report.

Key Words: Sustainability, Electrochromic, Technology, Return on Investment, Environmental, Comparison

STANDARD GLAZING + ADDITIONAL FEES FOR MODIFICATIONS	MINIMUM	MAXIMUM
Low-E Glass Cost @ \$15 - \$25 (per SF)	\$75,000.00	\$125,000.00
Low-Iron Glass [Ultra Clear] @ \$3 (per SF)	\$0.00	\$15,000.00
Acoustic Rating STC 45 [Add Lamination] @ \$5 (per SF)	\$0.00	\$25,000.00
Interior Blinds or Shades @\$12 - \$35 (per SF)	\$60,000.00	\$175,000.00
Safety Glass - HT or FT @ \$5 (per SF)	\$0.00	\$25,000.00
Exterior Window Treatments / Shade @ \$0 - \$80 (per SF)	\$0.00	\$400,000.00
Dry Wall Pockets for Electric Shade @ \$85 (per LF)	\$0.00	\$41,055.00
HVAC Right-sizing @ \$45 (per SF Floor Plate)	\$0.00	\$135,000.00
10 Year Energy Savings 2kWh - 4KWh @ \$0.18 (per kWh)	\$106,344.00	\$212,688.00
Totals	\$241,344.00	\$1,153,743.00

Return on Investment by Supplier

NET HALIO UPCHARGE vs. STANDARD GLAZING		
Halio Budgetary Price Total		\$350,000.00
Standard Glazing System Total		
(Minimum)		\$241,344.00
(Maximum)		\$1,153,743.00
HALIO Upcharge		
(Minimum)		\$108,656.00
(Maximum)		-\$803,743.00

Halio Product price comparison vs minimum standard glazing cost and maximum standard glazing cost with all additional modifications

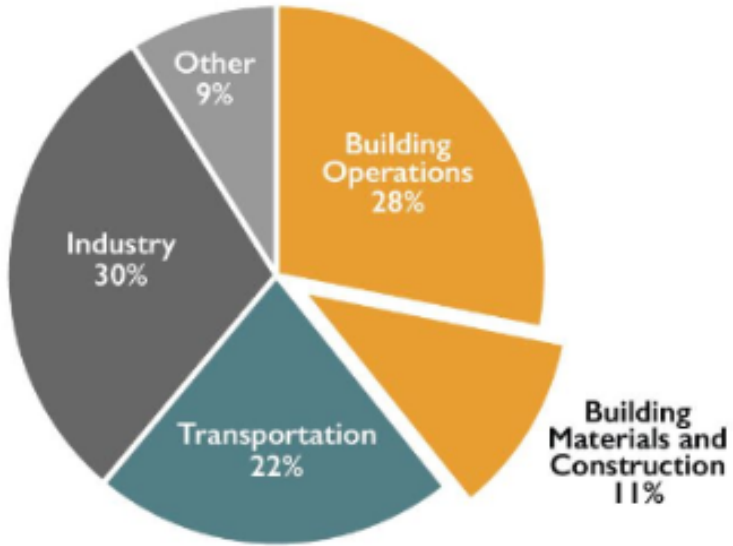
SMART GLASS TECHNOLOGIES UPCHARGE vs. STANDARD GLAZING		
Smart Glass Technologies Budgetary Price Total		\$675,000.00
Standard Glazing System Total		
(Minimum)		\$241,344.00
(Maximum)		\$1,153,743.00
SMART GLASS TECHNOLOGIES Upcharge		
(Minimum)		\$433,656.00
(Maximum)		-\$478,743.00

Smart Glass Technologies Product price comparison vs minimum standard glazing cost and maximum standard glazing cost with all additional modifications

NET SMART GLASS COUNTRY UPCHARGE vs. STANDARD GLAZING		
Smart Glass Country Total		\$475,000.00
Standard Glazing System Total		
(Minimum)		\$241,344.00
(Maximum)		\$1,153,743.00
SMART GLASS COUNTRY Upcharge		
(Minimum)		\$233,656.00
(Maximum)		-\$678,743.00

Smart Glass Country Product price comparison vs minimum standard glazing cost and maximum standard glazing cost with all additional modifications

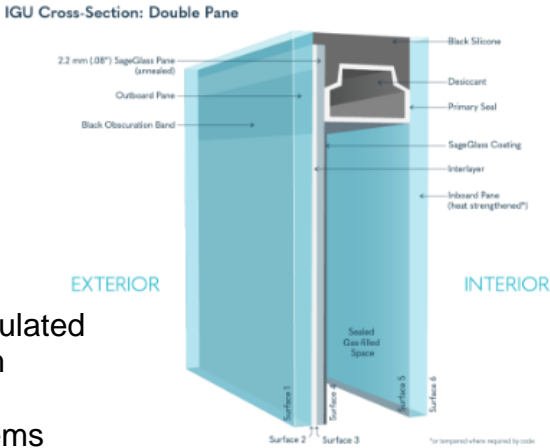
Global CO<sub>2</sub> Emissions by Sector



Source: © 2018 2030, Inc. / Architecture 2030. All Rights Reserved. Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017

Chart from New Buildings Institute that shows Global CO2 emissions by sector. Notice how Buildings and its operations make up 39% of all CO2 emissions globally. Electrochromic Technology not only increases occupant comfort it also greatly reduces emissions due to building operations.

To the left are the standard glazing costs typically associated with a standard glazing system used for comparison in my return on investment analysis



To the right is an insulated glass unit (IGU) from Sageglass used in electrochromic systems