

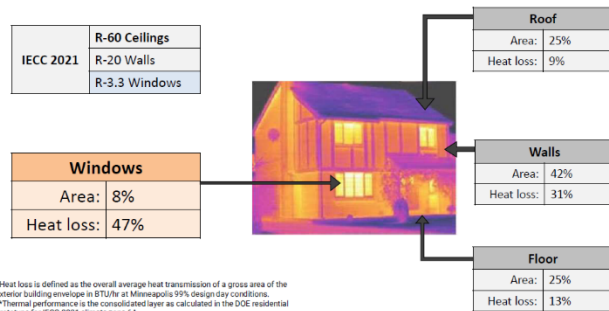
# High-Performance Glazing Promotes Building Resiliency

## The request:

- Create utility subsidies and tax credits to building owners for building restoration using high-performance glazing.
  - Use of high-performance glazing is a strategy for carbon mitigation, energy savings, skilled job creation and higher income and sales tax.
- Ensure that embodied carbon legislation also considers operational carbon gains and building resiliency.

## The issue:

Residential and commercial buildings are responsible for almost 40% of carbon dioxide emissions<sup>1</sup> and energy usage in North America.



\*Heat loss is defined as the overall average heat transmission of a gross area of the exterior building envelope in BTU/hr at Minneapolis 99% design day conditions.  
 \*\*Thermal performance is the consolidated layer as calculated in the DOE residential prototype for IECC 2021 climate zone 6A.

Upgrades in glazing technology in the last 20 years have significantly improved heat-loss performance for residential and commercial structures.

Existing legislation targeting embodied carbon does not take into consideration the long-term benefits glazing materials provide by mitigating carbon impacts through ongoing operational costs.

At the local level, changes in building performance standards requiring improvements in existing buildings are taking off. However, adoption among cities is scattered and could be supported by initiatives at the federal level to encourage window and building envelope upgrades as well as lighting and mechanical systems.

Addressing the building envelope leads to long-term energy efficiency, allows downsizing and more effective use of funding for replacement mechanical systems, and promotes building resiliency in the event of extreme weather and blackouts.

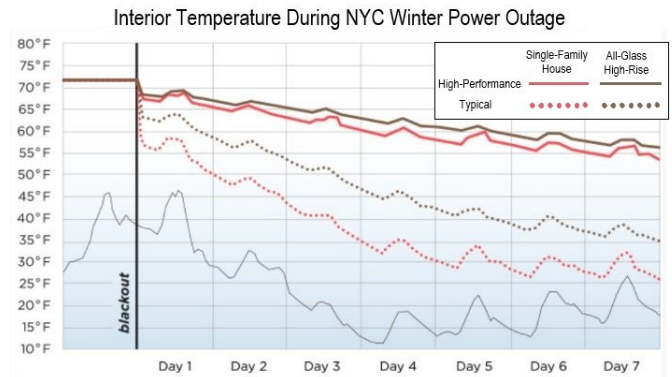
High-performance windows lower building operational costs, reduce carbon emissions, creates skilled-labor positions through urban renewal projects and improves occupant comfort and building resiliency.

## The strategy:

Upgrade of installed windows improves building energy performance by up to 20%<sup>2</sup> and reduces operational cost and carbon emissions.

In both commercial and residential installations, operational energy/carbon savings from improvements in window performance exceeded the amount of embodied energy/carbon of the new material in less than a year.<sup>3</sup>

In the event of extended power disruption, high-performance windows promote building resiliency and maintain habitable interior temperatures for longer periods of time.<sup>4</sup>



Installation of fenestration/glazing & high-performance products improve building resiliency and efficiency and supports skilled-worker job creation along with urban renewal.

High-performance glass is a key component in domestic supply of solar panels and building integrated photovoltaics (BIPV). Growing the use of on-site renewable energy is critical to achieving net-zero energy and carbon targets and will also help increase grid resiliency and U.S. energy independence.

National Glass Association (NGA) combined with the Glass Association of North America (GANA) in 2018 to create the largest trade association serving our industry. We develop standards, create technical resources, and promote and advocate for glass in the built environment. Learn more at [glass.org/about-nga/advocacy](http://glass.org/about-nga/advocacy). For further information on glass industry sustainability efforts and CO<sub>2</sub> eq. please feel free to contact NGA Technical Staff at [technicalsvcs@glass.org](mailto:technicalsvcs@glass.org).



## References:

- <sup>1</sup> <https://www.eesi.org/topics/built-infrastructure/description>
- <sup>2</sup> <https://www.cardinalcorp.com/technology/case-studies/>
- <sup>3</sup> <https://www.glass.org/triple-glazing-and-embodied-energy-yes-juice-worth-squeeze>
- <sup>4</sup> [Atelier 10 study for Urban Green "Baby its cold inside"](#)



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