

THE NATIONAL GLASS ASSOCIATION PRESENTS

BEC

CONFERENCE™

25TH
Anniversary

WHERE WE'VE BEEN & WHERE WE'RE GOING

MARCH 5-7, 2023 | LAS VEGAS | GLASS.ORG

STATE OF THE INDUSTRY: EYE ON THE HORIZON



Sophie Pennetier
Enclos Coalition



Kelly Whittingham
Ubiquitous Energy



Trent Thiry
Isoclima



Katy Devlin
NGA, Glass Magazine



What if every surface around us could generate invisible renewable electricity?

**Ubiquitous Energy's
truly transparent solar
makes it possible**

**Our first products
turn buildings into
vertical solar farms**



The Magic of UE Window Products

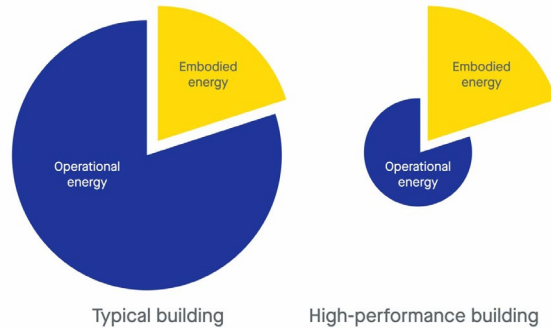
- Invisible solar **embedded** into existing product & value chain
- A **drop-in solution**, with the same aesthetics and performance
- A **scalable, industry-standard** manufacturing process

EMBODIED CARBON PARAMETERS

+ FUTURE ENERGY SUPPLY + POLICY LANDSCAPE + LIMITED MATERIAL RESOURCES

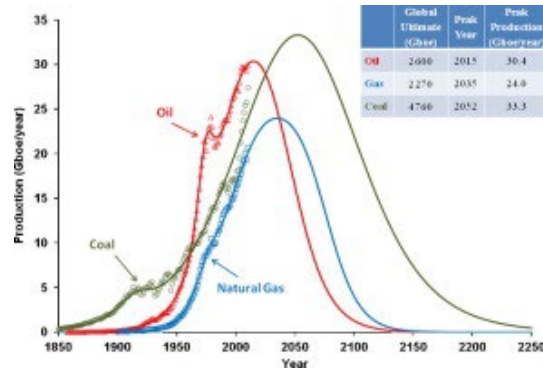
1. EMBODIED VS OPERATIONAL

Buildings: Total Lifetime Energy Use



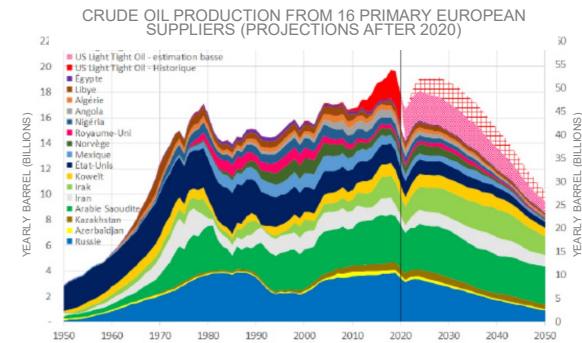
SOURCE: PAYETTE

2. ENERGY SUPPLY SHORTAGE



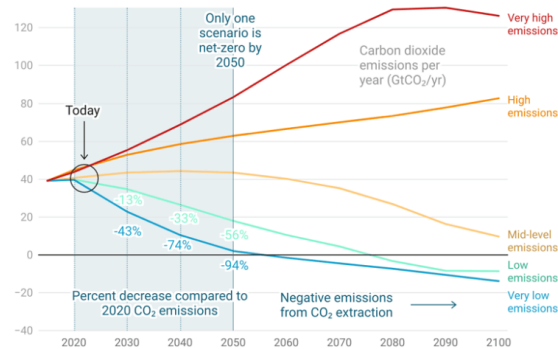
SOURCE: WHEN WILL OIL, NATURAL GAS, AND COAL PEAK? G. MAGGIO, G. CACCIOLA, FUEL 2012

3. OIL SUPPLY SHORTAGE



Source: données Rystad Energy - analyse et projections post-2020 The Shift Project
EDITED FROM: RYSTAD ENERGY + SHIFT PROJECT 2020

4. POLICIES (DOMESTIC + INTERNATIONAL)



SOURCE: UN CLIMATE REPORT 2021

5. WASTE MANAGEMENT



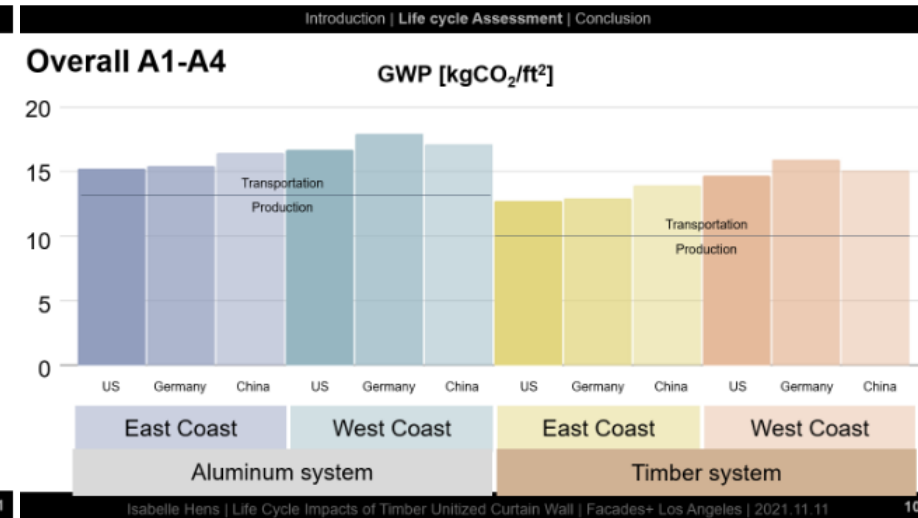
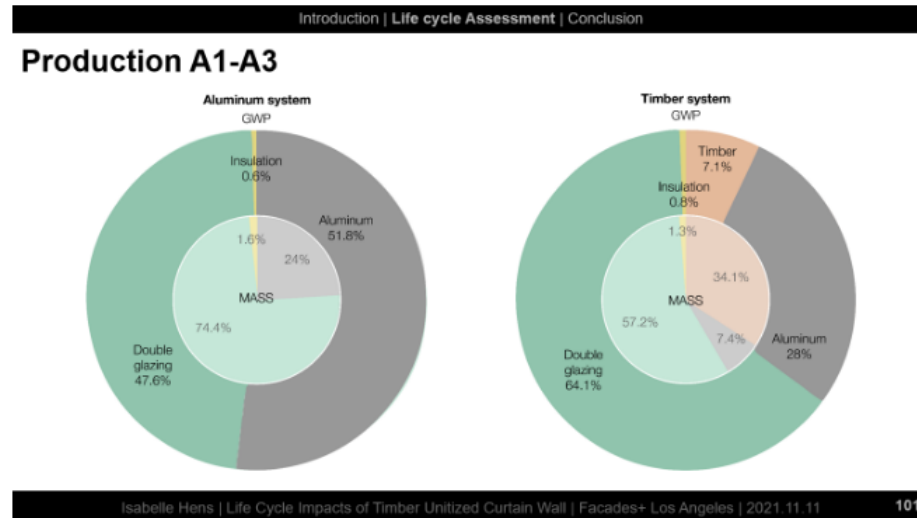
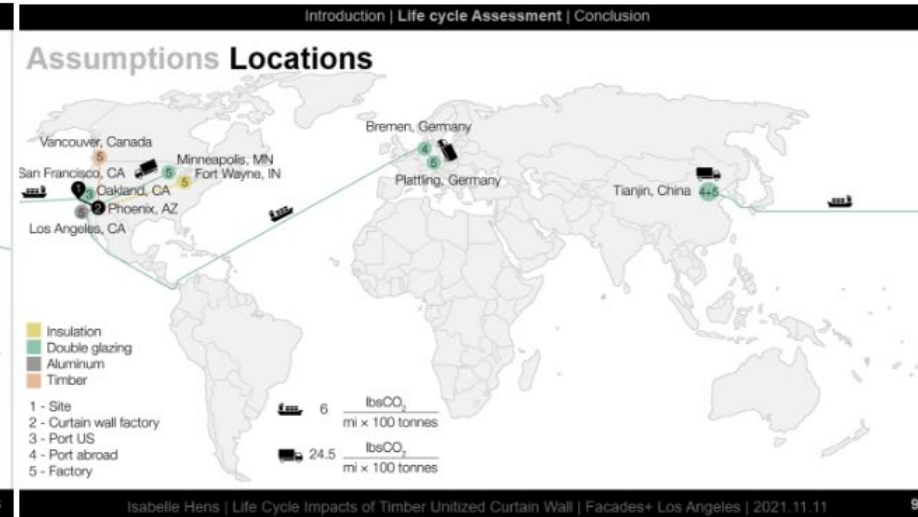
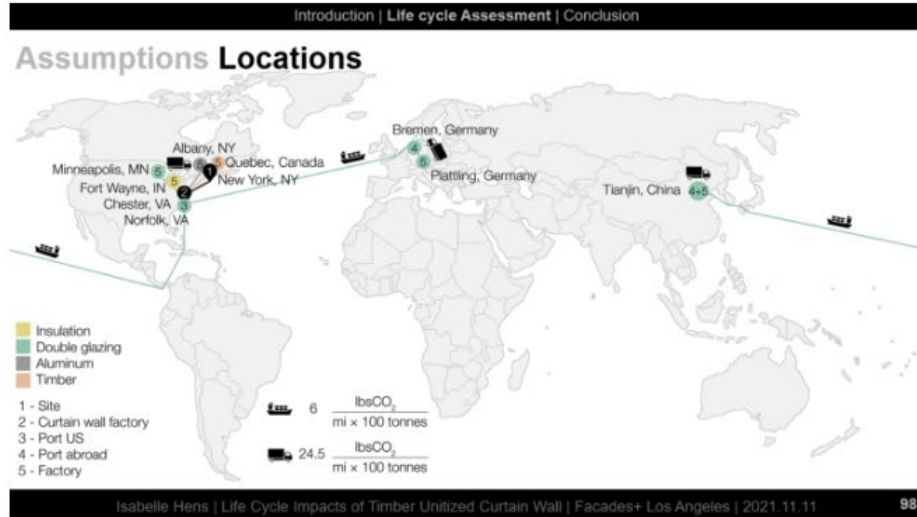
SOURCE: FOX5

6. LIMITED RESOURCES + BEYOND CARBON



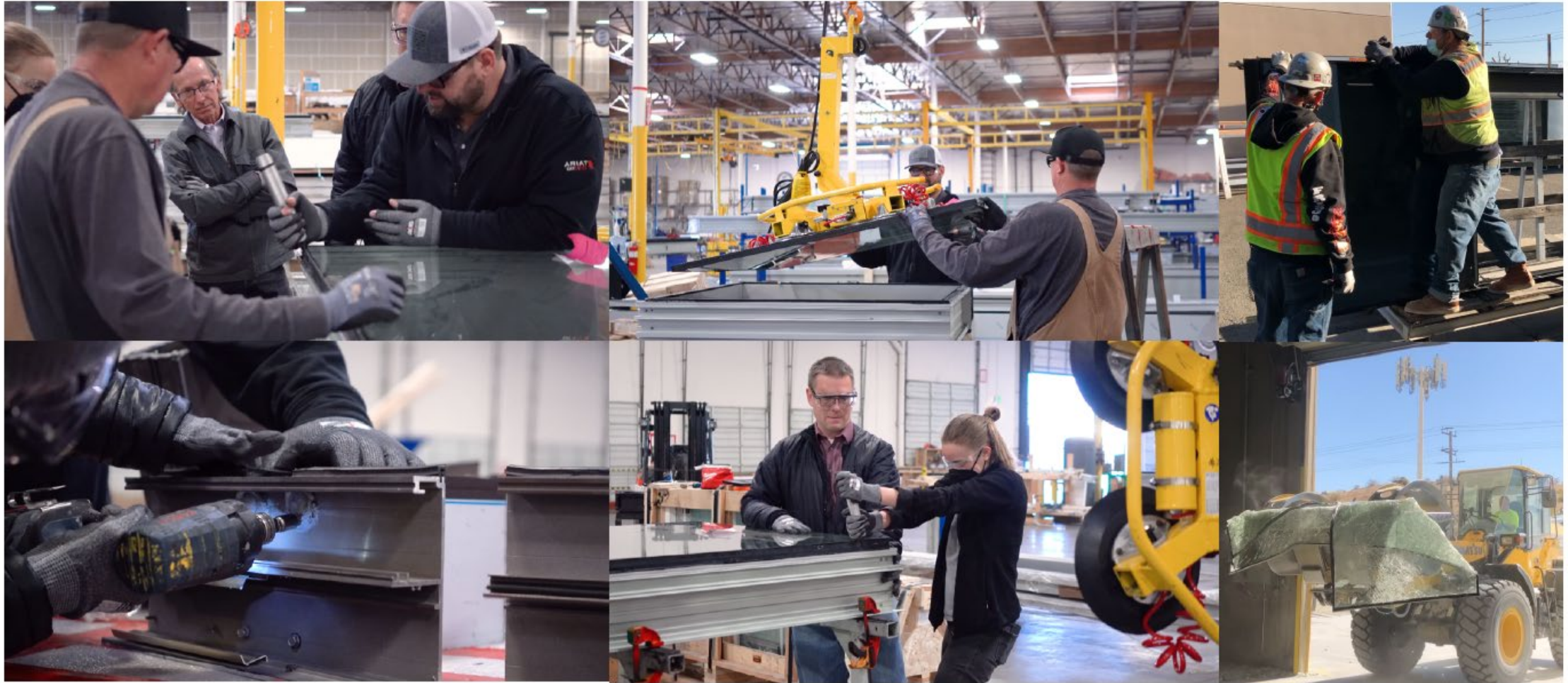
SOURCE: WORLDTLAS

EMBODIED CARBON IF WE CAN'T MEASURE IT, WE CAN'T MANAGE IT



SOURCE: HENS, PENNETIER, UC BERKELEY, ENCLOS 2022

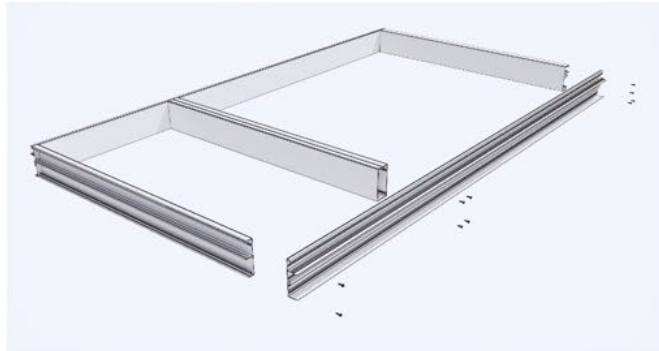
DESIGN FOR DISASSEMBLY



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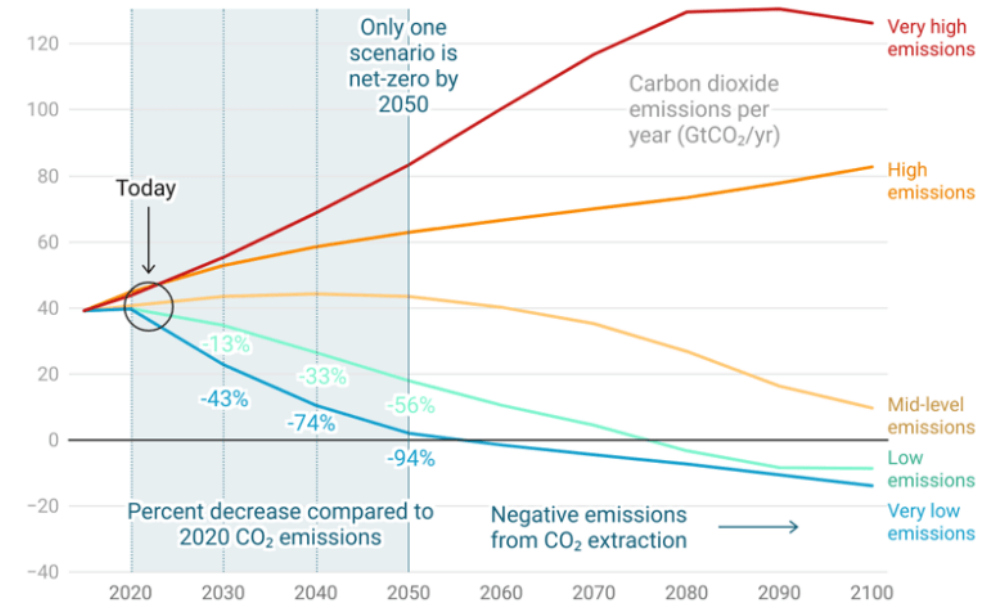


EMBODIED CARBON INFORMED STRATEGIES

- Low Carbon materials and Supply Chain
- Product transparency / Chain of custody
- Design for Disassembly:
 - Today's effectiveness vs future cost of energy
 - More universality ("USB" of mullions?)
 - Contamination vs. Recycling (future harvesting)
 - Liability management sub-products?

Future trends:

- Beyond carbon (red-list, VOC)
- *Ultra-Dynamic* markets / products / policies / supply-chain / technical knowledge / skillsets



SOURCE: UN CLIMATE REPORT 2021

STATE OF THE INDUSTRY: EYE ON THE HORIZON

SAFETY & SECURITY



Trent Thiry
VP – Sales & Marketing, North America
Isoclima Specialty Glass, LLC.
Global Security Glazing

SAFETY



Manufacturing
Fabricators
Frame Assembly

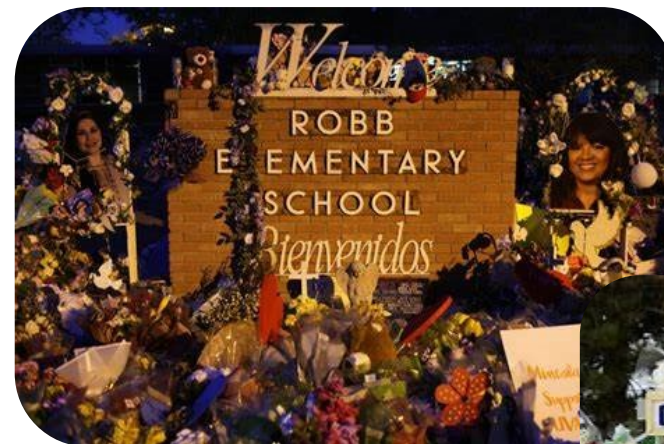
Jobsite
Glaziers
Skilled trades

Occupants
Workers
Occupants
Teachers

Communities
Environment
Plants & Animals

SECURITY

- Security of buildings has come to the forefront, with increasing incidents nationwide
- Glass that is poorly designed can be an easy access point for bad actors. **However... solutions are out there!**
- Threats are ever changing, as bad actors use information from the past to adapt
- Buildings are designed over the course of years, and are planned to last for decades
- Needs to be at the forefront of design to design for building security
- Solutions for retrofitting existing buildings with security glazing



DESIGN AESTHETICS



- Increased usage of glass to add daylight within the building
- Curvature and patterned glass
- Replacement of mechanical screening from windows and partitions
- Printed glazings that incorporate intricate bespoke light transmissions

STRATEGIES

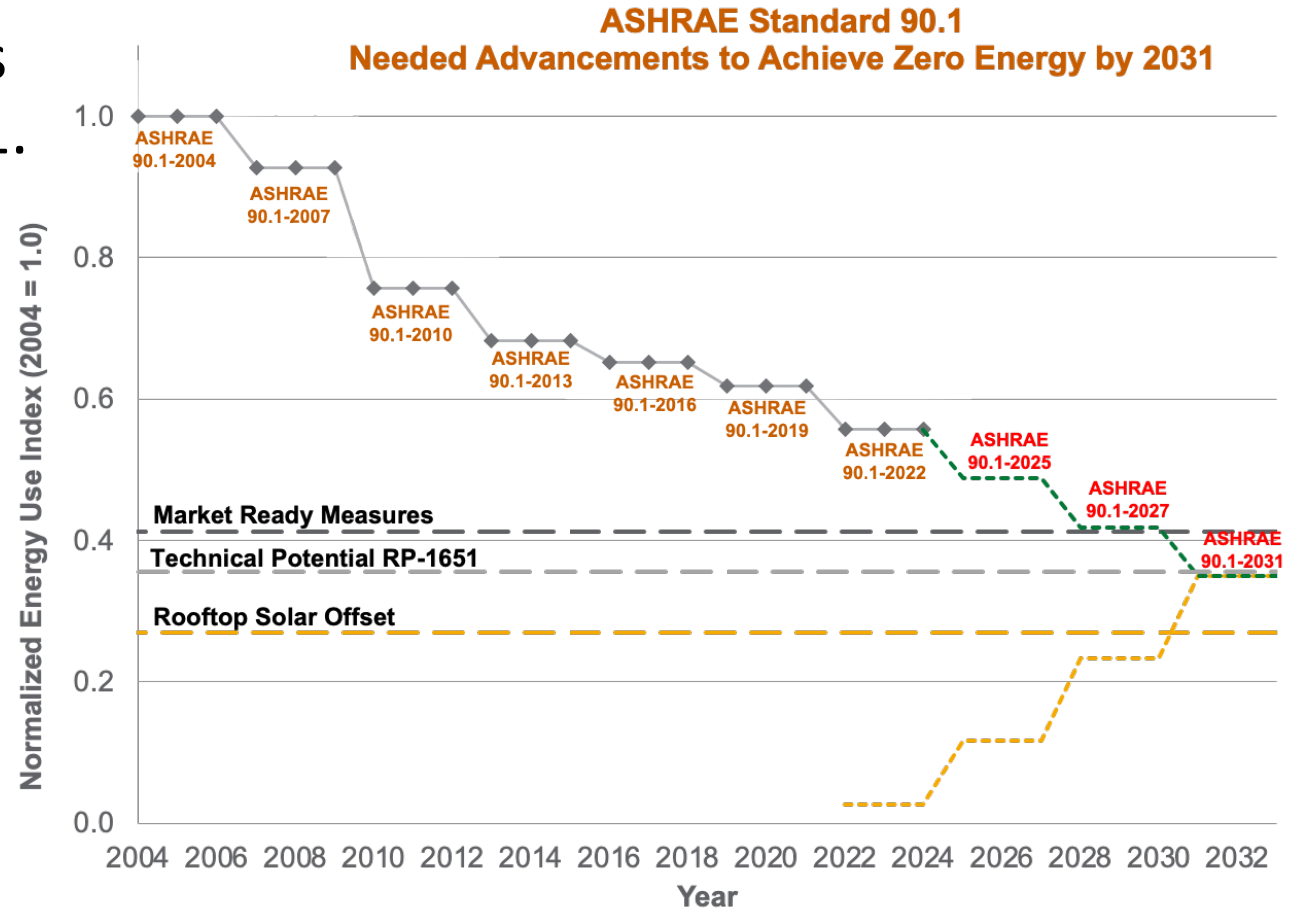
- Conscientious design of the building, considering the entire *life-cycle*
- Driving safety as a *driving force* through the design process
- Selecting appropriate materials to ensure that we achieve *security* for our end users
- Now... and into the *future*

THE CODE CONNECTION: NET ZERO CODES – EFFICIENCY + RENEWABLE ENERGY

- IECC and ASHRAE 90.1 now have goals to achieve net-zero energy by 2030-31.
- Will see significant increases in **efficiency requirements** (prescriptive and new energy credits)

AND

renewable energy requirements
 (including BIPV)



THE CODE CONNECTION: IRA INCENTIVES

- Sec. 48 Investment Tax Credits for Electrochromic Glazing, and for Solar and Building Integrated Photovoltaics (BIPV)
 - Baseline credit **6%** of total installed cost.
 - Multiply by **5x** to **30%** if meet prevailing wage and apprenticeship requirements.
 - May also be able to add **2-10%** for meeting domestic content minimums.
 - **Electrochromic:** very short timeline, construction must begin before Jan 1, 2025
 - **Solar and BIPV:** covered to beyond 2032. May also earn additional credit if located in a low income community or 'energy community' (affected by closed coal mines or power plants).
- For both, we believe IRS will interpret that the credit applies to the entire installed assembly (i.e. the full curtain wall and installation labor, not just the glass) which greatly increases the value of the credit.

THE CODE CONNECTION: NGA RESOURCES

- Windows are the First Responders – Advocacy Day – LASSA
- Recyclability/Circular Economy – Recycling Architectural Glass task group
- Embodied Carbon + Operational Carbon
- Impacts & Opportunities of the Inflation Reduction Act on-demand webinar:
glass.org/ondemand-webinars#energy

PRIORITY ISSUES

NGA supports and advocates for policy priorities important to the architectural glass and glazing industry—high-performance glazing and building resiliency, bird-friendly glazing, recycling and the circular economy, school security, and registered apprenticeship programs.

To share how glass is an adaptable, sustainable, energy-efficient, strong, beautiful, safe, and essential building product, NGA developed handouts on these priorities, in an easy one-pager format for legislators and stakeholders. Tell your glass story on the topic(s) important to your company by downloading the following documents.

- [Bird-Friendly Glazing in Building Construction](#)
- [High-Performance Glazing Promotes Building Resiliency](#)
- [School Security: Windows Respond First](#)
- [Window Recyclability: Circular Economy](#)
- [Registered Apprenticeship Programs](#)