

2022 ANNUAL REPORT



ABOUT THE NGA

FOREWORD

It's been five years.

February 1, 2023, marks the 5th anniversary for combining two glass associations into one focused, highly productive trade association representing the entire glass and glazing industry.

What has the National Glass Association with GANA delivered?

This annual report captures highlights for 2022. Like the 2021 annual report, you'll see a through-line framed by our four strategic goals—Educate, Promote, Advocate and Grow—our purpose and our vision as the only glass and glazing trade association in North America.

2023 is also the 25th anniversary of the Building Envelope (BEC) Conference and the 75th anniversary of the National Glass Association.* Together, we will celebrate these milestones while continuing to plan for an even stronger future.

On behalf of the 2022-2023 NGA Board of Directors, and our leadership before and after this term, we pledge to find new and innovative ways to position our member companies and our industry for the greatest impact.



Nicole Harris
President and CEO
National Glass Association

*The National Glass Association was founded in 1948; the Glass Association of North America (GANA) was incorporated in 1994 resulting from a consolidation of the Flat Glass Marketing Association (FGMA), Glass Tempering Association (GTA), and the Laminators Safety Glass Association (LSGA).

CORE VALUES

NGA exists to serve and represent our members.



Member Focus

We strive to thoroughly understand our members' business objectives and goals so we can deliver the best member experience.



Inclusion

We represent a diversity of companies with a unified purpose to help grow successful businesses and to champion the benefits of glazing and glass building products.



Innovation

We pursue every avenue to fulfill our vision of glass as the material of choice to enhance spaces where people live, play, learn, work and heal.

CORE FOCUS

NGA serves the entire glazing and glass building products supply chain.

- To advocate on behalf of our members and the industry.
- To provide our members with unparalleled technical expertise and resources.
- To help educate and train our industry's current and future workforce.
- To offer a place to learn and network at industry-focused conferences and events.
- To share best practices, trends and information through our magazines, websites and digital media platforms.

CORE GOALS

Educate

Drive excellence, safety and results through education and training.

Advocate

Vigorously promote and defend the glass industry.

Promote

Elevate the image of glass as a safe, healthy, sustainable and inspiring building product and advance the industry as a viable, thriving and exciting career path.

Grow

Build NGA's membership to increase influence, impact and results.

WHAT SETS NGA APART

NGA is focused. We are the only trade association focused exclusively on glass, glazing and glass building products issues and needs.

NGA is comprehensive. We serve and represent the entire glass, glazing and glass building products supply chain—from primary glass manufacturers to glass fabricators to commercial and residential glass installing companies.

NGA is different. We have a unique set of products and services to meet member and industry needs at every level of the glass, glazing and glass building products supply chain.

The NGA Foundation helps us achieve these goals. The NGA Foundation is a 501(c)(3) nonprofit organization where tax-deductible donations can be made for training the industry, advocating on behalf of the industry, and promoting the industry by educating consumers about the many ways glazing and glass building products contribute to a safe, healthy, sustainable, and inspiring built environment.

EDUCATE

NGA's resources for education and training take several forms to meet the needs of its members and stakeholders when and where they're at — whether that's at a jobsite, on the plant floor or in an office.

MyGlassClass.com, technical papers and manuals, business publications, a host of webinars, conferences and events held throughout the year, along with education for design professionals, are ways NGA helps keep its members and the industry at the top of their game.



MYglassclass.com

An initiative of the **NGA**

MyGlassClass.com offers over 100 courses for contract glaziers, full-service glass companies, glass and metal fabricators, customer service and sales reps, and business owners. Courses are designed to complement—and shorten—companies' hands-on training.

MyGlassClass.com also offers **NGA Glazier Apprentice Curriculum** for organizations and companies that want to establish a glazier apprenticeship program approved by the U.S. Department of Labor. Students who complete the NGA Glazier Apprentice Curriculum will earn a jointly endorsed **NGA/NCCER** credential indicating a journeyman-level minimum competency reached through knowledge and performance.

MyGlassClass.com currently offers over 50 courses in Spanish with additional translations planned.

Milestones

- **October 2022: GlassFab pilot program at GlassBuild America 2022**

NGA hosted a pilot program called GlassFab at this year's GlassBuild America in Las Vegas. The program was created with the goal of both providing easy-to-implement education to attendees while also discovering the educational needs and pain points of glass fabricators and plant personnel.

- **December 2022: Glass & Glazing Requirements of the Model Building Codes**

NGA has developed a new course complementing the Glass & Glazing Requirements of the Model Building Codes Manual. Working in conjunction with the manual, this course provides students with an opportunity to evaluate installation examples to determine which codes and standards apply. Students use the information within the manual to determine specific code requirements.

MYGLASSCLASS.COM SNAPSHOT

120

Number of Courses

4,100+

MyGlassClass.com Users to Date

450

New Students in 2022

150+

Students Enrolled in the NGA Glazier Apprentice Curriculum

ADVANCING THE INDUSTRY AS A VIABLE, THRIVING AND EXCITING CAREER PATH

In October 2022, Frameless Hardware Company (FHC) and the Friese Foundation committed to continue and increase respective generous support of glass and glazing industry education in 2023 through MyGlassClass.com. Thanks to this generous support, the National Glass Association can continue the apprenticeship grant program, which has covered the curriculum enrollment costs of over 150 apprentices.

"We are thankful and humbled by the generosity of FHC and the Friese Foundation," says Nicole Harris, NGA president and CEO. "As a not-for-profit organization, we are capable of so many amazing things, and we're even more impactful and swift with the help of supporters like FHC and the Friese Foundation."

Milestones

2022 saw five U.S. states and the province of Ontario, Canada, added to NGA's roster of state apprenticeship programs using the NGA Glazier Apprentice Curriculum.

NEW STATE
APPRENTICESHIP
PROGRAMS IN 2022



TECHNICAL AND BUSINESS PUBLICATIONS

When it comes to learning about glass, NGA is your authority and resource. We offer in-depth Design Guides, Glass Technical Papers (GTP), business manuals, and papers written and developed by industry experts for fabricators, glaziers, suppliers and manufacturers, and others involved in glazing and glass building products. Many technical resources are available at no cost to the entire industry, and members save up to 50 percent on all manuals, guides and books. Learn more in the [NGA Store](#).

Milestones

In 2022, NGA released one new and one updated manual, two new and 13 updated GTPs, and one new Design Guide. New! [Types of Decorative Glass](#)

New! [Alignment in US Energy Conservation Codes ASHRAE 90.1 and IECC](#)

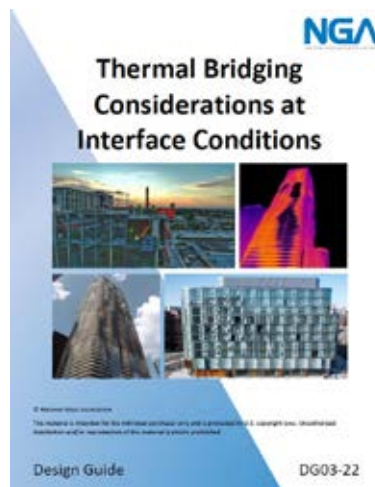
Updated! [Guidelines and Best Practices on How to Manage Color Variance of Decorative Glazing](#)

Updated! [Building Envelope Commissioning](#)

Updated! [Assessing the Compatibility of Glazing Materials and Components](#)

Updated! [Describing Architectural Glass](#)

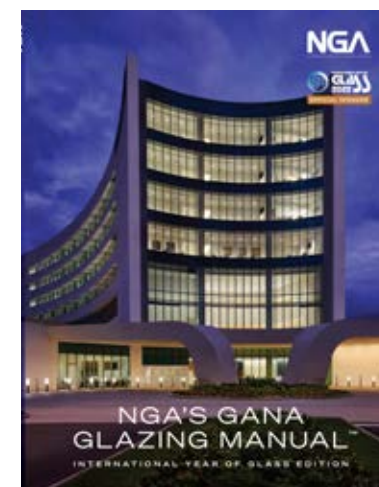
Updated! [Guidelines for the Production of Heat-Treated](#)



January 2022: Thanks to the dedication of task group members, NGA published Thermal Bridging Considerations at Interface Conditions Design Guide.



May 2022: In celebration of 2022 International Year of Glass, NGA created NGA's Glossary of Architectural Glass & Glazing.



December 2022: Thanks to the dedication of task group members, NGA published the updated IYOG edition of NGA's GANA Glazing Manual.

Architectural Flat Glass

Updated! [Iridescence in Heat-Treated Architectural Glass](#)

Updated! [Assessment of the Weatherability and Durability of Decorative Glass](#)

Updated! [Building Energy Performance Criteria Terms and References Related to Glass and Glazing](#)

Updated! [Performance Improvements in Insulating Glass Units](#)

Updated! [Bid Considerations for Contract Glazing](#)

Proposals

Updated! [Bullet Resistant Glazing](#)

Updated! [Detention Facility Glazing](#)

Updated! [Marking and Labeling of Architectural Glass](#)

NGA STORE SNAPSHOT

87

GTPs

THREE

Design guides

FIFTEEN

Manuals/Books/Guides

3,260

Downloads/purchases from the NGA Store in 2022

10 TOP PRODUCTS
IN 2022

- Glossary of Architectural Glass & Glazing
- GANA Glazing Manual – 50th Anniversary Edition
- Use of Laminated Glass in Glass Railing Systems (FB33-11)
- School Security Glazing (FB71-21)
- World of Glass Map: Global Float Plant Database
- GANA Sealant Manual
- Security Glazing (FB43-14)
- Design Considerations for Laminated Glazing Applications (FB04-03)
- Approximate Weight of Architectural Flat Glass (FM01-08)
- World of Glass Map: Architectural Glass Fabricator Database

WEBINARS



Thirsty Thursday

Quench your thirst for knowledge with NGA's Thirsty Thursday webinar series. The 30-minute sessions are held the third Thursday of most months and cover a wide range of industry trends and technical issues.

Milestones

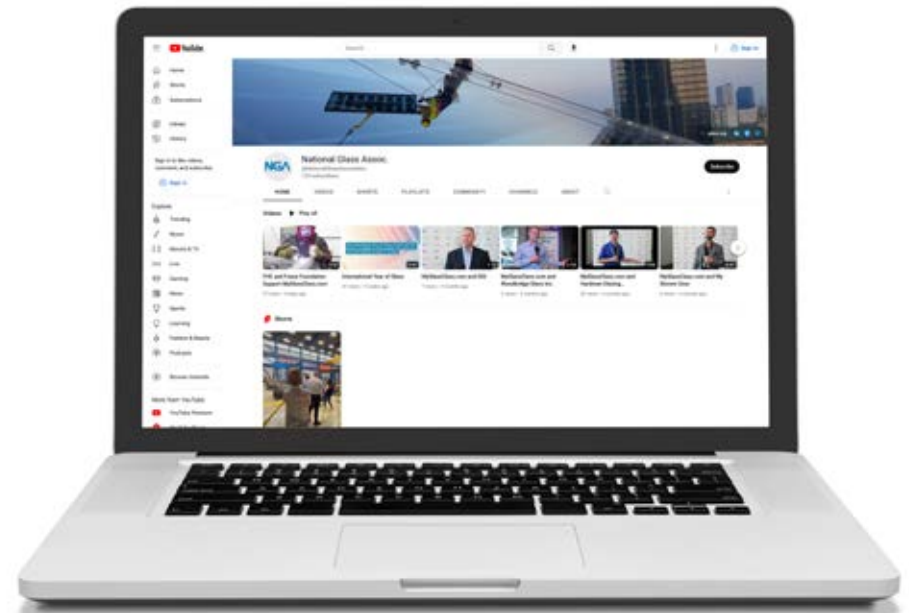
- Recent topics have included: The Glazing Industry's Impact on the Active Shooter Standard, Impacts and Opportunities of the Inflation Reduction Act, Embodied Carbon in Glazing and Fenestration: EC3 demo, Counting Carb(on)s Embodied versus Operational, New IGU Technologies for Carbon Reduction and Zero Net Energy.
- Thirsty Thursday webinars draw up to 300 attendees each month.

Other Webinars

Additional educational webinars were offered in 2022 in collaboration with partner organizations to relay pertinent information affecting the glazing and glass building products industry outside the technically focused sessions.

Embodied Carbon in Glazing and Fenestration: an EC3 Demo was held in collaboration with Building Transparency and FGIA.

Impacts and Opportunities of the Inflation Reduction Act was provided by Tom Culp, Birch Point Consultant and NGA energy code consultant.



WATCH ALL OF OUR THIRSTY THURSDAY WEBINARS AND OTHER VIDEO CONTENT FROM THE NGA ON OUR YOUTUBE CHANNEL.

CONFERENCES AND EVENTS

Held throughout the year, NGA's conferences and GlassBuild America: The Glass, Window & Door Expo provide our member community—and the glass and fenestration industry at large—opportunities to come together for networking, education, committee meetings, and more.

NGA Glass Conferences

Held twice annually, these events draw like-minded business leaders to influence and advance the industry through our Forming, Fabricating, and Advocacy Committees activities.

Highlights from the NGA Glass Conference: Long Beach

Highlights from the NGA Glass Conference: Chicago

Milestones

January 2022: NGA Glass Conference: Long Beach—[read the recap](#).

July 2022: NGA Glass Conference: Chicago—[read the recap](#).

Building Envelope Contractors (BEC) Conference

Highlights from the BEC Conference

Milestone

The BEC Conference drew near-record attendance, drawing in 640 registrants.

Bridging the Supply Chain

Bridging the Supply Chain was a new addition to NGA's 2022 events and featured a half-day of solution-sharing programming that bridged the Building Envelope Contractors (BEC) Conference and GPAD in Nashville, Tennessee. The concept provided a unique and timely opportunity, bringing fabricators, glazing contractors and suppliers to tackle pain points in our supply chain.

Programming included future-ready façades, key pain points for glaziers and fabricators, and communication for persuasion and influence.



Glass Processing Automation Days (GPAD)

GPAD—Glass Processing Automation Days—provided a unique two-day opportunity to investigate new and innovative technologies in the glass fabrication industry and to discover the additional benefits of automation and integration. GPAD was founded in 2013 by FeneTech Inc.; NGA took over as organizer in 2019, with FeneTech recognized as a “Founding Partner.”

Highlights from GPAD

Milestone

GPAD also exceeded previous registration counts, bringing in over 170 participants.

Glazing Executives Forum

This one-day conference was held on Tuesday, Oct. 18, in conjunction with GlassBuild America: The Glass, Window & Door Expo in Las Vegas. It brought leaders of contract glazing companies together to learn and share best business practices unique to installing companies. A meeting of the NGA's Installing Committee was also held.

Economist Connor Lokar returned to present an industry economic forecast and was a highlight of the day-long event.

Highlights from the Glazing Executives Forum

GlassBuild AMERICA



THE GLASS, WINDOW & DOOR EXPO

GlassBuild America is the largest annual trade show for the glass and fenestration industries in the Americas. GlassBuild 2022 returned to Las Vegas for the first time since 2018.

Highlights from GlassBuild America

Industry Pavilion

Brimming with activity throughout GlassBuild, the Industry Pavilion served as “The Hub” for members of the National Glass Association and the Fenestration & Glazing Industry Alliance (FGIA). Visitors to the Industry Pavilion were met by NGA or FGIA staff and board members and got an opportunity to learn more about the solutions the industry’s associations provide for their businesses.

Main Stage

Sponsored by MyGlassClass.com, Glass Magazine and Window + Door, the GlassBuild Main Stage attracted overflowing and engaged crowds for education, awards presentations, social gatherings and more. Sessions included educational content spanning hard-hitting topics such as mental health advocacy

within construction trades, our yearly technical and codes update, and industry economic forecast highlights, to light-hearted fun with MyGlassClass.com trivia, the Glass Magazine Awards presentation and everything in between, including presentations from FGIA and Dow. To top it off, a celebration of Women in Glass + Fenestration received an overwhelmingly positive response.

Women in Glass + Fenestration

Women in the glass and fenestration industry are interested in building a culture of equity, diversity, and inclusion. A standing-room-only crowd gathered for the inaugural Women in Glass + Fenestration event at GlassBuild. Successful female industry experts Deb Callahan of the National Fenestration Rating Council, Barbara Kotsos of Giroux Glass and Alicia Hamilton of the National Glass Association led discussions on how to encourage the next generation of women to join our industry. The event concluded with a plaque presentation from AGMT for the first female certified glaziers.

[Watch a highlight video](#)
[Read about the event](#)

Mental Health

The National Glass Association hosted a panel discussion, Mental Health and Suicide Prevention, during GlassBuild America 2022, to start a conversation within the industry on addressing mental health and suicide prevention. Panelists John Hewitt, “We Mind and Kelly Matters;” Steve Dillon, VEKA North America; Dustin Anderson, The Alone Effect; and Mai Tran from the American Foundation for Suicide Prevention all indicated the importance of breaking the stigma around suicide and mental health. A good first and ongoing step is having conversations.

[Watch a highlight video](#)
[Read about the event](#)

WMA Alliance

The National Glass Association collaborated with the World Millwork Alliance to bring the WMA Annual Convention & Tradeshow to co-locate with GlassBuild America: The Glass, Window & Door Expo, in October at the Las Vegas Convention Center. The WMA Annual Convention & Tradeshow brings together the global millwork industry, including millwork distributors, manufacturers of products and services, pro dealers, sales representatives, and architects, builders, contractors and remodelers.

2023 NGA CONFERENCES & EVENTS

(Subject to change)

NGA Glass Conference: Miramar Beach

Jan. 24-26, 2023
Miramar Beach, FL

Building Envelope Contractors (BEC) Conference

Mar. 5-7, 2023
Las Vegas, NV

NGA Glass & Glazing Advocacy Days

March 27-28, 2023
Washington, DC

NGA Glass Conference: Tacoma

Jul. 25-27, 2023
Tacoma, WA

Glazing Executives Forum

Oct. 31, 2023
Atlanta, GA

GlassBuild America: The Glass, Window & Door Expo

Oct. 31-Nov. 2, 2023
Atlanta, GA

GLASSBUILD AMERICA SNAPSHOT

8,200

Attendees

LAS VEGAS, NV

Location

53

Number of countries represented

146,700 net square feet

Exhibit floor size

50

U.S. states represented



FOR DESIGN PROFESSIONALS

AIA-approved Presentations

NGA is an approved AIA Provider of CES credits. Thanks to the involvement of our volunteer members, NGA has several approved presentations for live (in-person or online) delivery as part of its resource library. NGA members may use these presentations when connecting with the design community.



Now is the time to stay in front of your stakeholders. Become an approved presenter and use NGA's AIA-accredited presentations now to host live, virtual meetings.

In 2022, NGA issued 111 AIA learning units to licensed architects.

Milestones

2022: A new decorative AIA presentation was created: Designing with Glass: Cast and Heat-Formed

Glass & Metal

The Glass Magazine Architects' Issue once again featured the popular educational resource All About Glass & Metals: Guide for Architects. The 2022 report took a deep dive into the High-Performance Glass Equation, with sections on:

- The Importance of Thermal Bridging
- New IGU Technologies for Carbon Reduction and Zero Net Energy
- Maximizing Daylight, Minimizing Discomfort and Glare

The article was adapted and expanded for use in the Glass & Glazing Design Academy.

Glass & Glazing Design Academy



NGA hosted its Glass & Glazing Design Academy with Architectural Record for a fourth year. NGA's accredited AIA presentations are available as on-demand, multimedia webinars, as well as editorial articles. Architects and design professionals can access all materials through [NGA's Academy](#).

In 2022, NGA sponsored two new articles through the Academy, including:

- Large Glass: An evolving choice for quality, stunning façades and interiors
- All About Glass & Metals: The high-performance glass equation (adapted from Glass Magazine)

Milestones

Top courses to date are:

- Understanding How Glazing Can Impact Safety and Fire Protection
- Beyond Energy: How Glass in Architecture Contributes to Occupant Well-Being and Comfort
- Key Advances in Fire-Rated Glazing
- The Many Benefits of Laminated Glass
- Critical Reasons to Specify Insulating Glass

Blueprint for Collaboration

The NGA Blueprint for Collaboration was held in conjunction with AIA '22 in Chicago on June 23, 2022. NGA hosted this private architect reception at the SkyDeck, Willis Tower. The event straddled goals of networking and education, offering 1.0 AIA learning unit on the topic of design team collaboration, including participants, goals and expectations. Session panelists included Keith Boswell, SOM; Peter Koukos, Harmon; Paul Daniels, FHC; Tara Brummet, Vitrum Glass Group; and Alan Kinder, Guardian Glass. Learning and collaborating are two keys for managing rapid change in architectural building design. Challenges and solutions were discussed with an eye on the future of glass in design. The event drew 60 attendees, of which 19 submitted for AIA credit.

PROMOTE

Elevate the image of glass as a safe, healthy, sustainable and inspiring building product and advance the industry as a viable, thriving and exciting career path. NGA maintains several avenues of engagement with our members, stakeholders and the industry. These include magazines, newsletters and websites.



GLASS MAGAZINE

Glass Magazine is the glass and glazing authority. Our editorial team reports on the entire supply chain, providing up-to-date news and insights on primary glass manufacturing, glass fabrication, installation and more. This trusted publication provides the market analysis and trend information that allows industry businesses to stay in the know.

Key Reports

Glass Magazine offers several industry reports, ranging from forecasts on key market segments, to industry rankings and market analysis. Here are some highlights from 2022:

- **The World of Glass**
Provides a snapshot of float glass production, in North America and internationally. Includes analysis from industry leaders on developments in supply and glass technology.
- **Top 50 Glaziers**
The industry's longest-running ranking. Features leading companies, as well as industry benchmarks and market headwinds.
- **The Glass Magazine Awards**
A celebration of the best in glass projects and products.
- **Top Glass Fabricators**
An industry ranking and market report, including industry fabricators. Provides insights into capital investments, product development and more.



GLASS MAGAZINE SNAPSHOT

718

Print pages

503

News items on GlassMagazine.com

EIGHT

Print issues

448,424

Web views

49

Editions of Glass Magazine Weekly

WINDOW + DOOR



Covering the entire residential fenestration industry, from source to sale, Window + Door is produced by the National Glass Association and is the official publication of GlassBuild America: The Glass, Window & Door Expo. Window + Door is dedicated to providing the entire fenestration industry with unbiased, relevant content that helps companies build more profitable businesses.

Key Reports

- **Industry Pulse**
The Industry Pulse Report takes stock of the entire supply chain for residential fenestration and provides insights on labor, materials, products and more.
- **Trendhunter Feature: Automated Hardware**
Trendhunter features examine up-and-coming trends affecting the industry.
- Annual Buying Guide
- **Top Manufacturers Report**
The Top Manufacturers Report and List details North America's largest residential fenestration manufacturers and discusses opportunities and challenges.
- **Window + Door Awards**
The annual awards program recognizes the most innovative products of the past two years, as voted on by a panel of peers.
- **Case Studies: Doors**
Case studies provide real-life examples of fenestration products in action.

WINDOW+DOOR SNAPSHOT

464

Print pages

485

News items on WindowandDoor.com

SIX

Print issues

382,276

Web views

43

Editions of Window + Door Weekly

Advocacy & Technical Updates

Sent to members monthly, this update provides timely information specifically about NGA's advocacy and technical activities, including opportunities to get involved in committees and task groups.

Most-Clicked Articles

- Jan. 2022: [NGA Glass Conference in pictures](#)
- May 2022: [New Resource: NGA Architectural Glass & Glazing Glossary](#)
- Aug. 2022: [Inflation Reduction Act 2022: What does it mean for the glass industry](#)
- Sep. 2022: [ASTM Publishes New Active Shooter Test Method](#)

Member Updates

NGA members receive updates twice per month to help keep them better informed on their member benefits and NGA's activities at a glance. A highlight of each edition is the NGA Member Spotlight, proudly highlighting our members to introduce them to fellow members and the industry.

[Year-end 2022 NGA Member Spotlight Gallery](#)



CREATING COMMUNITY

The NGA member community is 1,700 companies strong. We are contract glaziers. We are full-service glass and specialty residential window and door companies. We are fabricators, manufacturers and suppliers. NGA provides a gathering place for you to learn, share, engage, and make connections to help you and your business grow.

Alliances

Much like the quote that says, "Collaboration is the essence of life—the wind, bees and flowers work together to spread the pollen," NGA believes that working together with others helps us to better champion the glazing and glass building products industry.

Milestones

[February 2022: NGA Represents Architectural Glass during IYOG Opening Ceremony](#)

[May 2022: NGA Co-Sponsors North American Pavilion at glasstec](#)

[June 2022: NGA and ASA Alliance Partnership Update—Lien and Bond Claims Resource](#)

[July 2022: MFG Day is Your Opportunity to Inspire the Next Generation](#)

[NGA and FGIA Hold Webinar Demonstrating EC3 Tool](#)

[October 2022: FHC and Frieze Foundation Invest Big in Glazier Education through NGA](#)

[NGA Member Company TGP Inspires the Next Generation During MFG Day 2022](#)



Women in Glass + Fenestration

The inaugural Women in Glass + Fenestration event took place at GlassBuild America in October.

[See more details in Educate.](#)

Mental Health

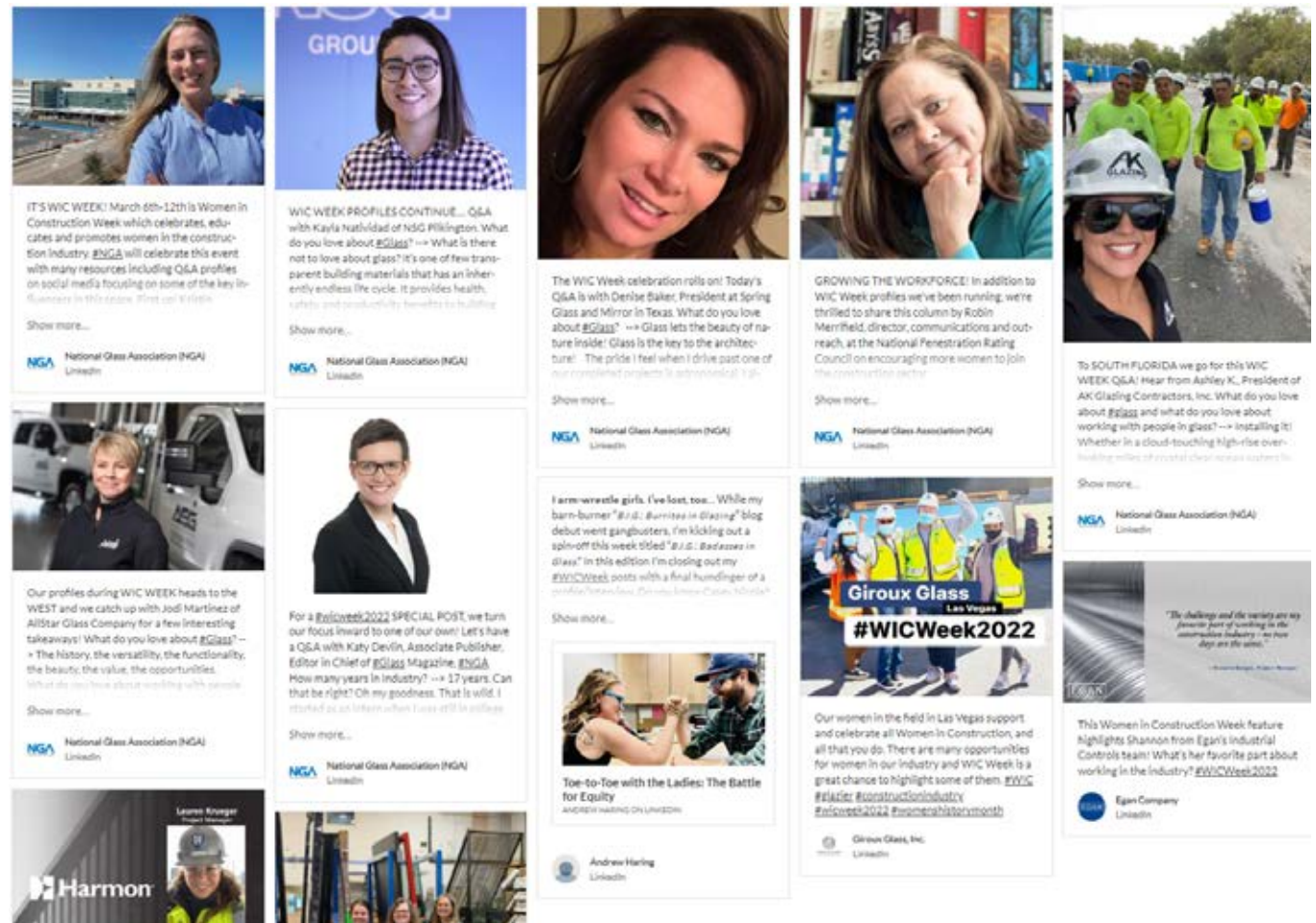
The National Glass Association hosted a panel discussion, Mental Health and Suicide Prevention, during GlassBuild America 2022, to start a conversation within the industry on addressing mental health and suicide prevention.

[See more details in Educate.](#)

NGA Glass & Glazing Advocacy Days

Industry leaders from NGA member companies, Congressional members and agency officials convened in Washington, D.C., April 4-5 for the association's first-ever Glass & Glazing Advocacy Days.

Policy priorities important to the architectural glass and glazing industry were at the forefront of the meeting—high-performance glazing and building resiliency, bird-friendly glazing, recycling



(Above) Social media highlighted Women in Construction Week with profiles of women making a difference in our industry.

(Right) Panelists discuss the importance of mental health and suicide prevention at GlassBuild America.

and the circular economy, school security, and registered apprenticeship programs.

NGA hosted the event as part of its year-long sponsorship and promotion of the [International Year of Glass](#) by the United Nations. [See more details in Advocacy.](#)



Commemorative Days

NGA continues to use a multi-platform approach to celebrate and support the many facets of the glass and fenestration industry.

Specifically, on seven commemorative days and months throughout the year, we promoted the industry's greatest attributes and offered resources, developed by NGA staff and committees, to continue amplifying glass as a vital building product, and the glass industry as a viable path to career success.

Milestones

[NGA Celebrates WIC Week 2022](#)

[NGA Supports Window Safety Week, April 3-9](#)

[NGA Supports Construction Safety Week](#)

[NGA Celebrates National Small Business Week](#)

[NGA Promotes Weather Safety Awareness](#)

[MFG Day is Your Opportunity to Inspire the Next Generation](#)

Extending Our Reach in Magazines

[Glass the Protector](#)

[4 Tips for Staying Safe in Extreme Heat](#)

[Ready for Hurricane Season?](#)

[Showing What's Possible: A Conversation with a Mother-Daughter Glazing Team](#)

[Women in Fenestration: Joining Voices to Benefit the Industry](#)

39+

Total posts on social media about commemorative days

30,247+

Total views

ADVOCATE

NGA's advocacy and technical initiatives respond to the relentless, ever-changing challenges to our industry. NGA is the glass and glazing authority; we are a resource for our members and the industry at large. We thank our volunteer members, industry partners and expert consultants who work tirelessly to ensure glass and glazing is at the forefront of all discussions impacting building regulations and innovation in construction.



NGA: GLASS AND GLAZING AUTHORITY

From the U.S. government to industry code bodies, organizations look to NGA to be the definitive reference when it comes to the architectural glass industry.

GSA Facilities Standard References NGA Design Guide

The U.S. General Services Administration (GSA) Facilities Standards for the Public Buildings Service (P-100) was updated this year. NGA's new Best Practices for Bird-Friendly Design Guide was noted as a point of reference for all U.S. GSA projects considering bird-friendly design.

NGA Task Group Develops ASTM Active Standard

NGA's task group on School and Facility Security developed a new industry consensus repeatable mechanical test method for forced entry of buildings, weakening the glass by shooting in a prescribed pattern, then simulating an attack with a mechanical impactor. ASTM F3561 Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack was published in September 2022.

Influencing Legislation: Advocacy One-Pagers

NGA provides one-pagers for legislators and stakeholders to share how glass is an adaptable, sustainable, energy-efficient, strong, beautiful, safe and essential building product. Below are the one-pagers currently available free of charge.

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

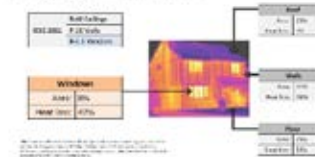
NGA NATIONAL GLASS ASSOCIATION with GANA ADVOCACY High-Performance Glazing Promotes Building Resiliency

The request:

- Create utility subsidies and tax credit 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 emissions¹ and energy usage in North America.



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, create skilled-labor positions through urban renewal projects and improves occupant comfort and building resiliency.

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/gana-advocacy. For further information on glass industry sustainability efforts and CO₂ eq, please feel free to contact NGA Technical Staff at technicalstaff@glass.org.

The strategy:

Upgrade of installed windows improves building energy performance by up to 20%² 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.³

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



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.





Participants from NGA member companies gathered in Washington, D.C., to champion the glazing and glass building products industry.

NGA Glass & Glazing Advocacy Days

NGA hosted Glass & Glazing Advocacy Days on April 4-5 in Washington, D.C., to advocate and educate about glass in the built environment. NGA members met with legislative representation from Florida, Wisconsin, Oregon, Washington, Michigan, Indiana, Virginia, Pennsylvania, South Carolina, Ohio, New York, Maryland, and the U.S. Environmental Protection Agency and U.S. Department of Energy. During the event, NGA staff and member companies discussed with legislative leaders six policy priorities and the vital role glass plays in the built environment.

Policy priorities:

- Energy-efficient buildings
- Building resilience
- Recycling
- Registered apprenticeship programs
- School security
- Bird-friendly glazing

NGA's 1,700 member companies employ 71,000 Americans who produce and

install glass for homes and commercial buildings and who generate more than \$10.3 billion in annual revenue. NGA promotes and defends the use of glass in the built environment. Installation of high-performance fenestration and glazing products are skilled trades and support urban renewal, creating more manufacturing and installation jobs. NGA member companies are following up with their local representatives to continue the momentum and conversation generated during the event. [Read a recap of the event.](#)

Following the event, U.S. Sen. Tina Smith (D-MN) cosponsored S.791, the Federal Bird Safe Buildings Act. This legislation would require the Federal General Services Administration to incorporate relevant features and strategies to reduce bird fatalities into newly constructed, acquired or substantially altered public buildings. The bill also mandates that GSA develop a related design guide and annually certify its active use.

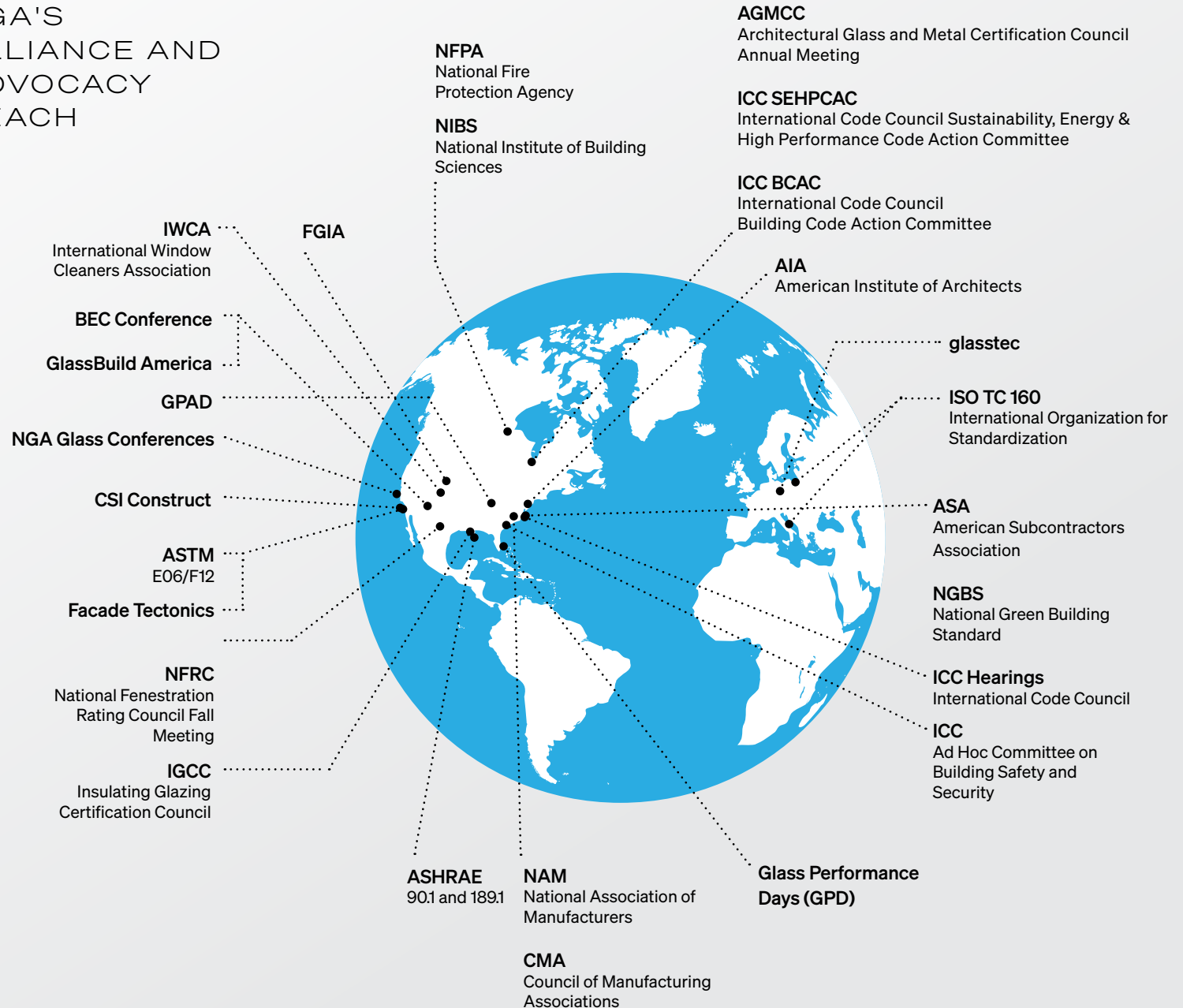


Darijo Babic, director of architectural sales, Guardian Glass, meets Rep. Neal Dunn (R-FL-02).

NGA'S ALLIANCE AND ADVOCACY REACH

Model Building Codes and Glazing Industry Standards

NGA is actively involved with standards and codes bodies, including the International Code Council, ASTM International and ASHRAE, among others, to promote and defend the use of glass in the built environment. NGA's Urmilla Sowell, Tom Culp, Thom Zarembo and Nick Resetar hold leadership positions and represent the glass and glazing industry in the International Code Council, ASHRAE 90.1, ISO International Standards Organization, PAWS: Partnership for Advanced Window Solutions, National Green Building Standard, ASTM and ASC Z97.



(Right) Urmilla Sowell represents the National Glass Association during the Opening Ceremony in Geneva, Switzerland, for the International Year of Glass 2022.

International Year of Glass

The General Assembly of the United Nations declared 2022 as the International Year of Glass. The year celebrated the essential role glass has in society, serving as a life-changing material in architecture, the environment, health care, science, technology and more. NGA supported the worldwide effort to achieve this designation and was an Official Sponsor of the initiative. NGA also had representation on the North American Steering Committee, leading the efforts for architectural glass activities and promotion in the U.S.

The International Year of Glass 2022 began with an Opening Ceremony at the Palace of Nations in Geneva, Switzerland, Feb. 9-11, 2022. Urmilla Sowell, NGA advocacy and technical director, joined global experts from the glass industry at the Opening Ceremony. Sowell noted the IYOG 2022 opening ceremony brought together many glass associations from all over the globe and, importantly, facilitated the connections between them and their conversations on moving the industry forward.



NGA had representatives leading a presentation given at the International Year of Glass closing ceremonies at the United Nations, held in December in New York City. This event celebrated 2022 International Year of Glass, showcased achievements of the glass and glazing industry, outlined the role of glass in the United Nations strategic goals and highlighted mental health attributes of glass in buildings. [This event is available online as a recording.](#)

Throughout the year, NGA promoted the solutions glass provides to the built environment and spotlighted the glass industry as an exciting and rewarding career to the next generation of workers. Visit glass.org/iyog for a recap on the year's activities and [see a recap video.](#)



MILESTONES

January 2022

NGA Technical and Advocacy staff attended the ASTM Glass Strength meetings in January. Attendees discussed updates to ASTM E1300—Standard Practice for Determining Load Resistance of Glass in Buildings.

February 2022

The 2024 IECC is now being developed with a consensus committee process similar to ASHRAE and ASTM to allow more technical consideration of proposals. There are several proposals potentially affecting both residential and commercial fenestration criteria that will be heard in the coming months. NGA is well represented with our code consultant Dr. Tom Culp of Birch Point Consulting holding a voting position on the main commercial consensus committee, as well as chairing the Envelope and Embodied Energy subcommittee.

March 2022

- Glass Performance Days (GPD) launched a series of online presentations to highlight the contributions to the GPD Finland 2021 proceedings book. The first edition March 2022 is Emerging Challenges

in Market Trends and includes NGA Advocacy and Technical Director, Urmilla Sowell, covering North American Market Trends. Additional speakers include Bertrand Cazes of Glass for Europe, Andreas Bittis of Saint Gobain and Sandra von Fintel of Schott AG. [Learn more and watch the presentations.](#)

- The article, Using Triple-Pane Windows to Meet IECC Envelope Requirements, was the technical feature in the March 2022 edition of ASHRAE Journal. NGA's energy consultant, Tom Culp, contributed to the article, authored by Robert Hart from LBNL and Edward Louie and Katie Cort from PNNL. The article describes how triple-pane windows can compensate for lower wall insulation and higher air leakage to meet the 2021 IECC envelope requirements for residential construction. This can be an affordable trade-off for home builders, increasing the value of the home. [The article is available to ASHRAE members and by subscription to non-members.](#)
- The primary roadblock in adopting a high-performing glass product is cost. However, the price tag for high-performance systems should be considered alongside the holistic costs

of building construction and operations. [Triple Glazing and Embodied Energy](#), by NGA Energy Code Consultant Tom Culp answers the question, "Is the Juice Worth the Squeeze?"

April 2022

The International Code Council Committee Action Hearings for updates to Group B of the model building codes were held March 27 to April 6 in Rochester, New York. NGA code consultants Thom Zaremba and Nick Resetar of Roetzel & Andress and Tom Culp of Birch Point Consulting represented NGA and the Glazing Industry Code Committee at the hearing, advocating on behalf of the glass industry. [Read more on glass.org.](#)

May 2022

The National Green Building Standard (NGBS) appointed Tom Culp, Ph.D., of Birch Point Consulting LLC and NGA energy code consultant, to the 2024 Consensus Committee. Culp previously served on the 2020 NGBS Consensus Committee and will now participate in the 2024 update of the standard. [Download the 2020 version of NGBS for free.](#) The NGBS is the only green building rating system for homes and apartments approved by the American National Standards Institute (ANSI), as an

American National Standard. The NGBS provides a blueprint for builders to follow for the design and construction of new and renovated single-family homes and multifamily apartment buildings. [Learn more about NGBS.](#)

July 2022

- The U.S. Environmental Protection Agency (EPA) announced final criteria for [Energy Star](#) version 7.0 Product Specification Residential Windows, Door and Skylights for low-rise residential buildings. NGA energy consultant Tom Culp of Birch Point Consulting reported at NGA Glass Conference: Chicago that the final comment period ran through Aug. 10, 2022; the final version was published Oct. 20, 2022. Implementation will begin one year after completion, on Oct. 23, 2023. Version 7.0 will significantly decrease U-values, which will push triple glazing and 4th surface low-e in the north and north-central climate zones, and the latest generation triple silver low-e in the south and south-central climate zones to meet lower SHGC criteria. [Read more here.](#)
- NGA's School Security Task Group rapidly developed a new ASTM International document created through the F12 Security Committee titled

Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack. A presentation about the topic was given at the NGA Glass Conference: Chicago, July 18-20. Frequency and severity of school shootings have risen in recent years, and with it, an increased need for a relevant international standard that considers the need to slow and, if possible, prevent intruders from entering facilities through locked fenestration. Security glazing products are a part of the equation for designing and creating safer schools by deterring and slowing forced entry during active assault events. [Read more here.](#)

- The ASHRAE 189.1 committee, which also forms the technical basis for the International Green Construction Code, is considering updating the requirements for environmental product declarations (EPDs). Industry-wide EPDs are available for flat glass from NGA and for aluminum extrusion framing from the Aluminum Extruders Council. Individual product EPDs are available from some individual companies. But there is still a general lack of EPDs on all processed glass and full assemblies. NGA energy code consultant Tom Culp of Birch Point Consulting LLC reported at NGA Glass Conference: Chicago that the NGA advocacy team has been watching this carefully, especially because there are likely spillover effects to LEED and other green programs from whatever is approved at ASHRAE 189.1. Culp said

NGA worked with the committee and believe the main proposal is now in better shape. It will increase the number of EPDs required on a building project, but importantly, (a) still allow industry-wide EPDs in addition to company-specific EPDs, (b) not require facility-specific EPDs, which is unworkable for multi-location companies, and (c) allow EPDs for components to be submitted for assemblies. [Read more from Culp on this update.](#)

September 2022

- The new ASTM F3561 Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack is now available. [Find the standard at ASTM.](#) The test is designed to simulate an active shooter weakening the system with repetitive shots followed by mechanically driven impact to simulate forced entry. NGA announced at the NGA Glass Conference: Chicago the new ASTM International document created through the F12 Security Committee and NGA's School Security Task Group. [Read the news.](#)
- NGA's fire, safety and structural code consultants Thom Zaremba and Nick Resetar of Roetzel & Andress represented the glass and glazing industry by participating in the International Code Council Group B hearings in Louisville, Kentucky. [Learn more about the event from ICC.](#)

- [glasstec](#)—International Trade Fair for Glass Production, Processing and Products, is the world's largest trade fair for the glass industry, held in Düsseldorf, Germany, from Sept. 20-23, 2022. NGA was the co-sponsor of the North American Pavilion at [glasstec 2022](#). NGA and [Glass Magazine](#) are proud to represent the North American glass and glazing industry at this prestigious international event.

“ SECURITY GLAZING PRODUCTS ARE A PART OF THE EQUATION FOR DESIGNING AND CREATING SAFER SCHOOLS. ”

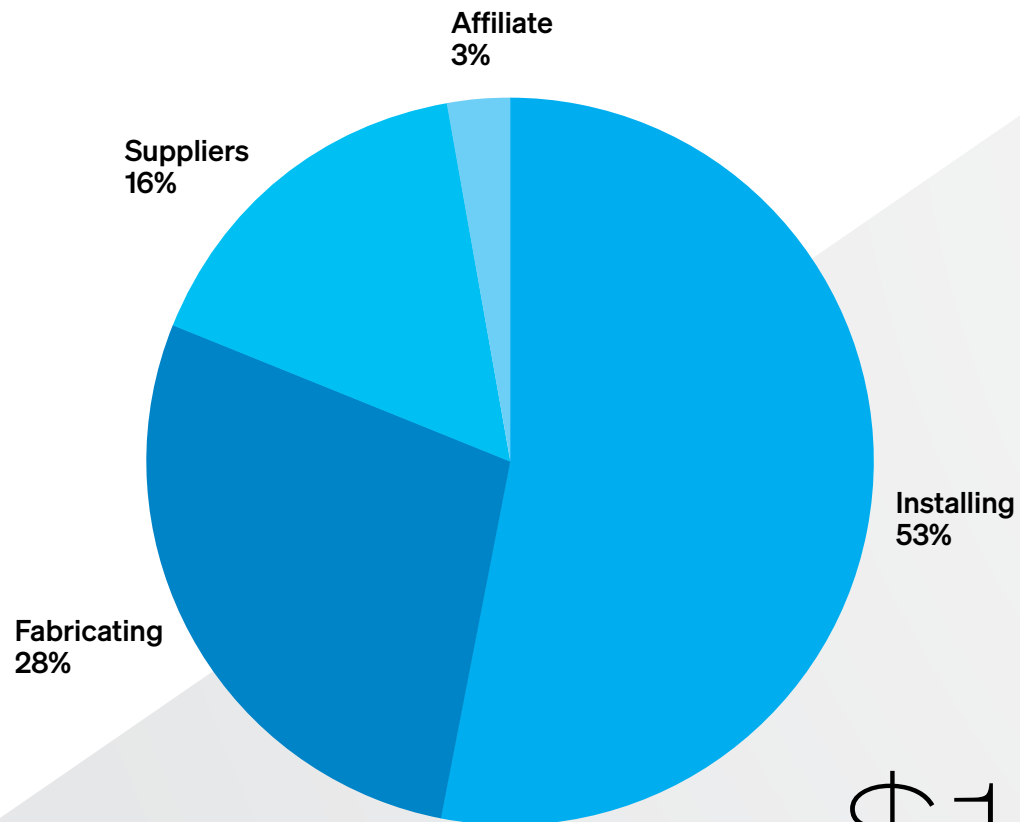
GROW

Build NGA's membership to increase influence, impact and results. The NGA member community is 1,700 companies strong and represents all aspects of the glazing and glass building products industry. We take pride in being a resource to our members to help grow successful businesses.



NGA MEMBERSHIP SNAPSHOT

By Company Type



By Location

25

NGA members span across the U.S. & Canada —including members in Alaska, Hawaii, Puerto Rico and Guam.

NGA has members in **25 countries** across the globe.

Years in Business

26

The companies featured in NGA's Members Spotlight in 2022 have been in business an average of **26 years**.

Economic Impact

\$10.3B

Combined, NGA member companies represent more than **\$10.3 billion** in annual sales in the glazing and glass building products industry.



CHAPTERS

NGA Supports Affiliated Chapters

The NGA Chapter Affiliation Program currently supports 10 regional glass associations through engagement in events, promotion and sponsorship of chapter activities, and offering NGA benefits to chapter members. NGA's chapter activity in the past year includes:

- NGA CEO Nicole Harris served as the featured speaker for the Washington Glass Association's online chapter meeting in March 2022, providing an update on industry trends and NGA resources and benefits available to chapter members.
- NGA staff attended the 2022 Mid-Atlantic

Glass Association Glass Expo and the Texas Glass Association-hosted TGA Glass Conference III.

- NGA sponsored chapter events for the Colorado Glazing Contractors Association, Mid-Atlantic Glass Association, Utah Glass Association, and Washington Glass Association, as well as continuing national promotion of chapter meetings and activities.
- NGA invited chapter executives and administrators to attend GlassBuild America 2022 in Las Vegas and hosted an informal gathering during the event to discuss challenges and opportunities for regional glass associations and how NGA can best provide support.



(Clockwise, from back left) Jim Stathopoulos, Courtney Little, Rick Locke, Tim Kelley, Tara Brummet, Ron Crowl, Silas Koonse, Kyle Sword, Nicole Harris, Jodi Martinez, Guy Selinske, Denise Bardwell Baker, Syndi Sim (not pictured, Brian Hale).

Volunteers

NGA enjoys celebrating the impact of volunteer service and the power of volunteers to come together to tackle tough challenges and build a stronger, more resilient community. The past year has been a striking example of the wide-reaching benefit that stems from unification in support of our partners and peers. We value our members who lend their time, talent, voice and support to the initiatives of the association.

NGA Board of Directors in 2022

NGA's Board of Directors consists of 13 voting members representing all segments of the industry. In 2022, NGA's Board of Directors met four times to discuss and decide matters of importance for the membership at large. The National Glass Association announced new board terms in October 2022.

COMMITTEE & TASK GROUPS

NGA volunteers contributed their time and resources collaborating to create technical content for the industry. On average:

57

task group meetings over
the course of the year

367

total volunteer hours
in 2022

AWARDS

NGA gave two membership awards in 2022 in honor of service, volunteerism and the betterment of the industry.

C. Gregory Carney Legacy Award: Thom Zarembo

The C. Gregory Carney Award is the highest honor the Association has to give. The award was established in 2014 after the passing of Greg Carney, who served as Glass Association of North America (GANA) Technical Director for over two decades. The award is for an individual involved in and advocating for the industry, demonstrating the Association's mission and values within the industry: doing what is right for the industry, not what is one-sided or popular.



Volunteer of the Year 2022: Chuck Knickerbocker, Technical Glass Products

The NGA Volunteer of the Year award recipient must be an NGA member that made significant contributions to the Association or profession in the past year.



THANK YOU INDUSTRY LEADERS

Everything NGA accomplished in 2022 comes with support from our industry leaders. We appreciate the generosity in time and expertise given by our board of directors, who represent the entire glazing and glass building products supply chain, and the volunteers who make up NGA's committees and task groups.

Meet your 2022-2023 industry leaders:

[NGA Board of Directors](#)

[NGA Committees](#)

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[GlassMagazine.com](#)

[WindowandDoor.com](#)

[GlassBuildAmerica.com](#)

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