

COTE ROUNDTABLE

03/07/2024



2024 COTE



Vaama Joshi
Gresham Smith
Co-Chair



Jennifer Todd
Little
Co-Chair



Donald Green
Progressive AE



Richard Alsop, Jr
Arc Review
AIA NC Advocacy Director



Garrett McCaffety
KMB Design Group



Liz McCormick
UNCC



Meghan Wirtner
JLL



Susana Amaral
Walter P Moore



Hans Stoven
Mcmillan pazdan smith
architecture

Learning Objectives (1 HSW Credit)

1. Provide understanding of the AIA 2030, MEP 2040 & SE 2050 Challenges, synergies between them and review the resources available to professionals for successful involvement.
2. Review the impact Charlotte-based firms can have on regional development by participating in the AIA 2030, MEP 2040 & SE 2050 Challenges.
3. Understanding of various strategies and technologies that could be implemented to simplify AIA 2030, MEP 2040 & SE 2050 Challenges-related reporting requirements.
4. Identify some of the most common challenges design firms face with participation in the AIA 2030, MEP 2040 & SE 2050 Challenges and discuss potential solutions.

Regional Application- Relevance

1. Charlotte has a fastest growing population, 15th largest city in United States
400,000 more new residents by 2040
2. In 2018, the **sustainable & resilient charlotte by 2050** resolution passed by City Council

SEAP (Strategic Energy Action Plan) Goals

Strive to source 100% of municipal energy use in buildings & fleet from zero carbon sources by 2030

Strive to become a low carbon city by 2050

3. Low active participation from local firms in AIA 2030, MEP 2040 & SE 2050

Introductions



Lauren Seydewitz
Sustainability and Resiliency Program
Manager
Gresham Smith



Allison Hampton
Structural Project Engineer
Gresham Smith




Garrett McCaffety
Director of Specialty MEP Engineering
KMB Design Group

AIA 2030 Commitment



MEP 2040
Committing to Zero



75%

of global greenhouse gas
emissions attributed to the
urban built environment

40%

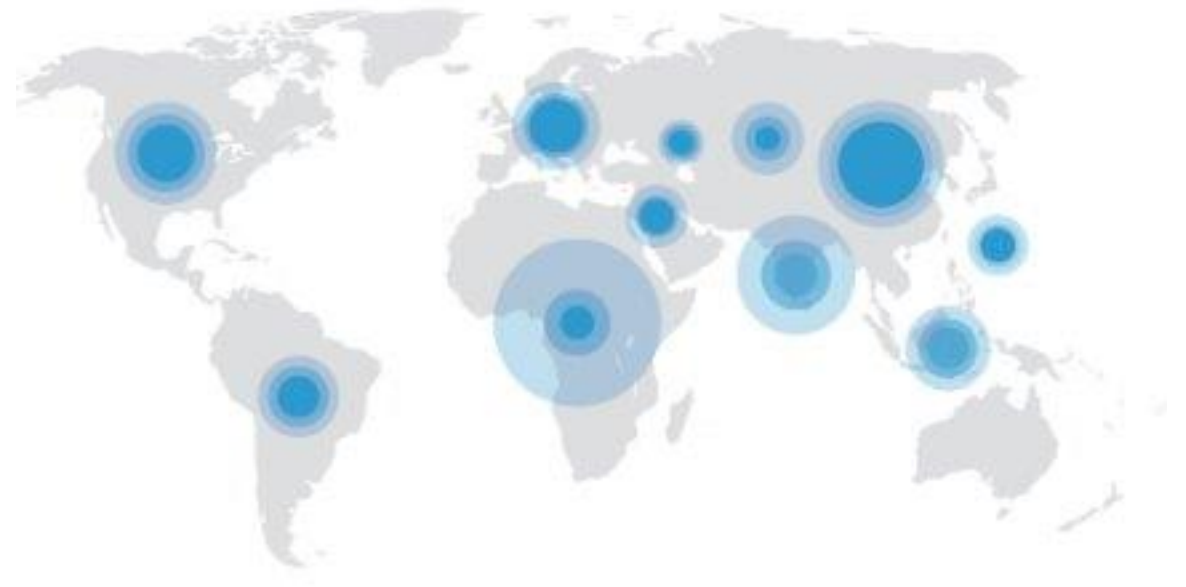
of global greenhouse gas
emissions attributed to
existing buildings

New Construction

2.5T estimated GSF of new construction

The equivalent of adding an entire New York City to the world every month for 40 years

Global building floor area is expected to **double** by 2060.



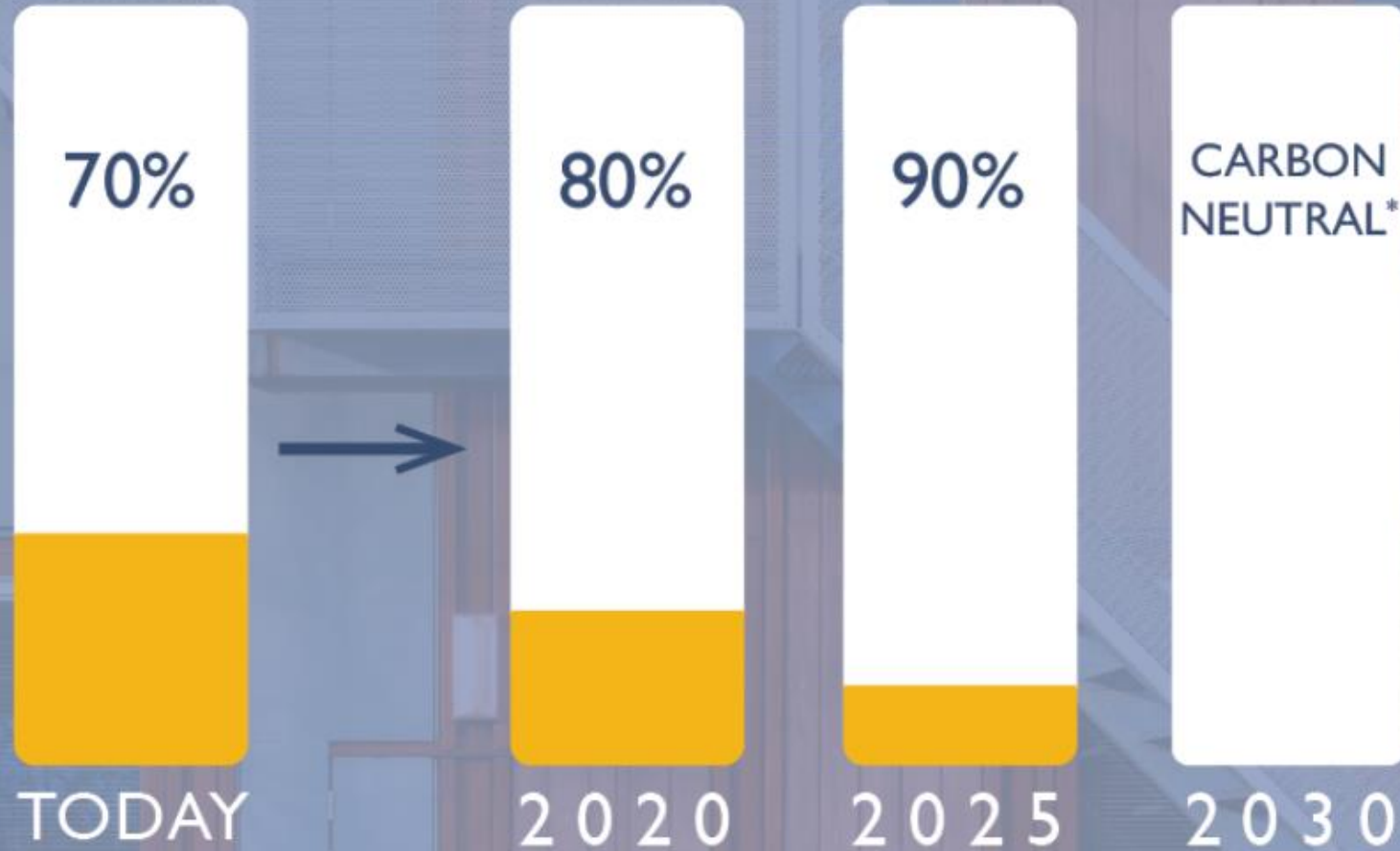
Source: Global ABC, Global Status Report 2017 via [Architecture2030](https://www.architecture2030.com)



THE 2030 CHALLENGE



- REDUCTION
- FOSSIL FUEL ENERGY CONSUMPTION



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*Using no fossil fuel GHG-emitting energy to operate.



G R E S H A M
S M I T H A N D
P A R T N E R S

April 8, 2009

Christine W. McEntee, EVP/CEO
The American Institute of Architects
1735 New York Ave., NW
Washington, DC 20006-5292

Dear Christine:

Gresham, Smith and Partners is a 700+ person firm headquartered in Nashville, is hereby signing on to the AIA 2030 Commitment program and its goal of carbon-neutral buildings by the year 2030.

The places where we live, work, and play represent the largest sources of greenhouse gas emissions in America, as well as around the world. The design and construction industry has made significant strides toward creating high performance buildings of all types and uses. As a result, the industry is positioned to have a profound impact by continuing to foster high building performance and reducing building-related greenhouse gas emissions.

As architects, we understand the need to exercise leadership in creating the built environment. We believe we must alter our profession's practices and encourage our clients and the entire design and construction industry to join with us to change the course of the planet's future. A multi-year effort will be required to alter current design and construction practices and realize significant reductions in the use of natural resources, non-renewable energy sources, and waste production and promote regeneration of natural resources.

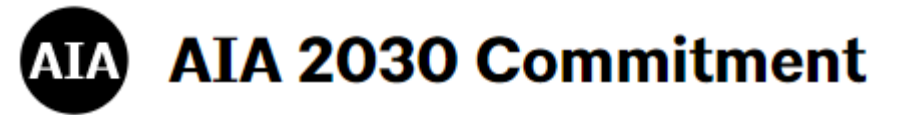
We therefore commit Gresham, Smith and Partners to take the following steps which are part of the AIA 2030 Commitment program:

- Within two months of the commitment date, establish a team or leader to guide the development and implementation of the firm's plan
- Within six months of signing the commitment, the firm will implement a minimum of four operational action items from the list provided. These actions will be undertaken while the long-term sustainability plan is in development
- Within one year of signing the commitment, the firm will develop a sustainability action plan that will demonstrate progress toward the AIA's 2030 goals.
- Make a summary of our sustainability action plan and annual progress reports available by providing them to the AIA.

RECEIVED APR 15 2009

Design Services For The Built Environment

1400 Nashville City Center / 511 Union Street / Nashville, Tennessee 37219 / Phone 615.770.8100 / www.gspnet.com



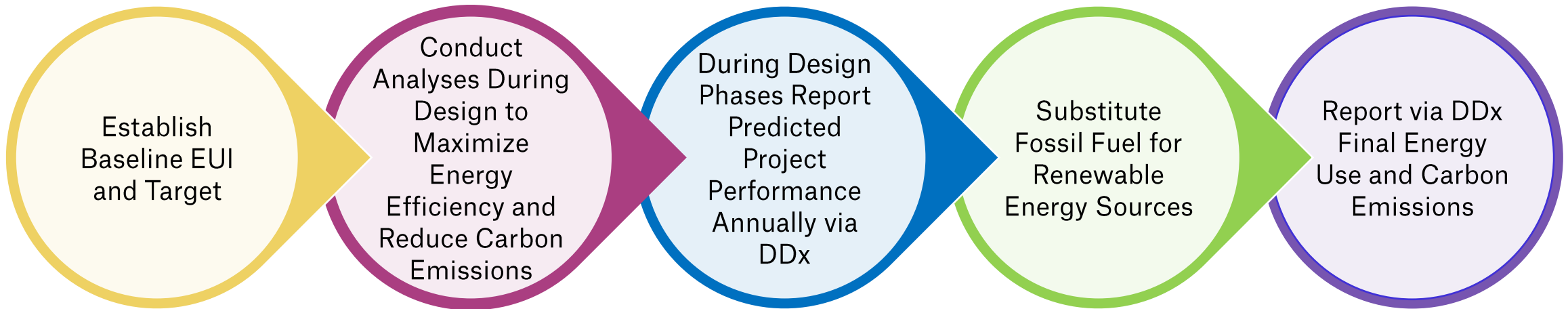
Sign on to the AIA 2030 Commitment

Develop a Firm Level Sustainability Action Plan

Collect Project Performance Metrics and Report Annually via Design Data Exchange (DDx) Platform



The 2030 Challenge, now reported as part of the AIA 2030 Commitment, can be met by following these steps for eligible projects:



- Eligible projects:
1. Conditioned space of new construction/major renovations
 2. Interior only projects with changes to the mechanical system and lighting



Data for Reporting

- Project name or identifier
- Country and zip code for US projects, city for international
- Project design phase
- Project use type
- Building area
- Energy modeling status
- Energy Use Intensity Baseline (EUI)
- Target/Predicted Energy Use Intensity (pEUI)
- On interiors-only projects: ASHRAE 90/1-2007 Lighting Power Density (LPD) Baseline, default or space by space
- Target/predicted LPD
- Design Energy Code
- Optional: Embodied carbon
- Optional: Annual fuel consumption by type



2030 BY THE NUMBERS

48%
overall pEUI reduction.

428
companies reported data.

19
companies met the 80%
predicted EUI (pEUI)
reduction target across
their entire portfolio.

23,276
projects reported.

346
whole-building projects
are predicted to be zero
net energy.

4%
of reported whole-building
GSF meets the 80% pEUI
reduction target.

72%
of reported interior-only GSF
meets the 25% predicted
lighting power density (pLPD)
reduction target.

107
countries represented.

62%
of reported whole-building GSF
has been energy modeled.

41.8 million
metric tons of CO₂ emissions
were avoided relative to 2030
baseline-equivalent buildings.



Resources

Challenge

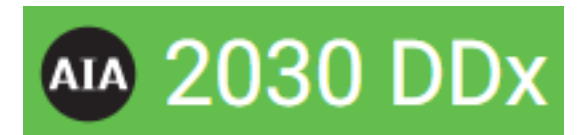
AIA 2030 Commitment

Design



AIA Guides

Reporting



Various Energy Modeling Tools



AIA 2030 Commitment



MEP 2040
Committing to Zero

SE 2050



We, the Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE), support the vision and ambition of the SE 2050 Challenge. We, as a leading structural engineering organization in the United States, recognize the need for coordinated action across our profession to achieve the globally stated goal of net zero carbon by 2050.

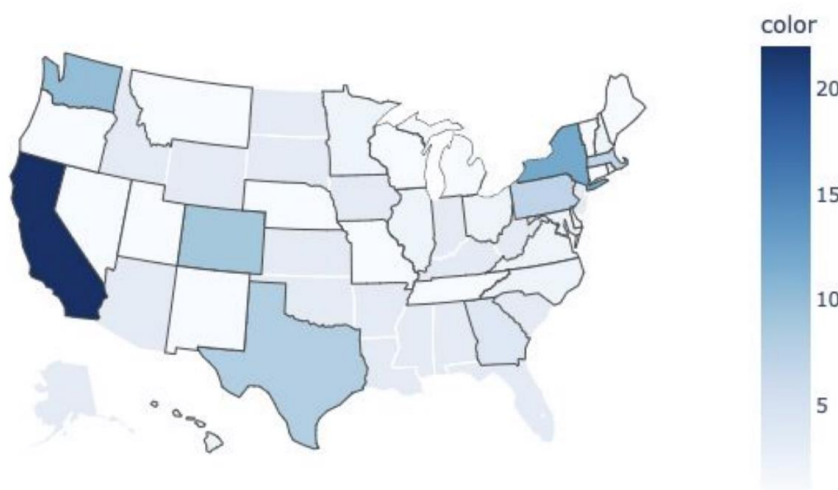


Figure 1: Location of Embodied Carbon Champions by State

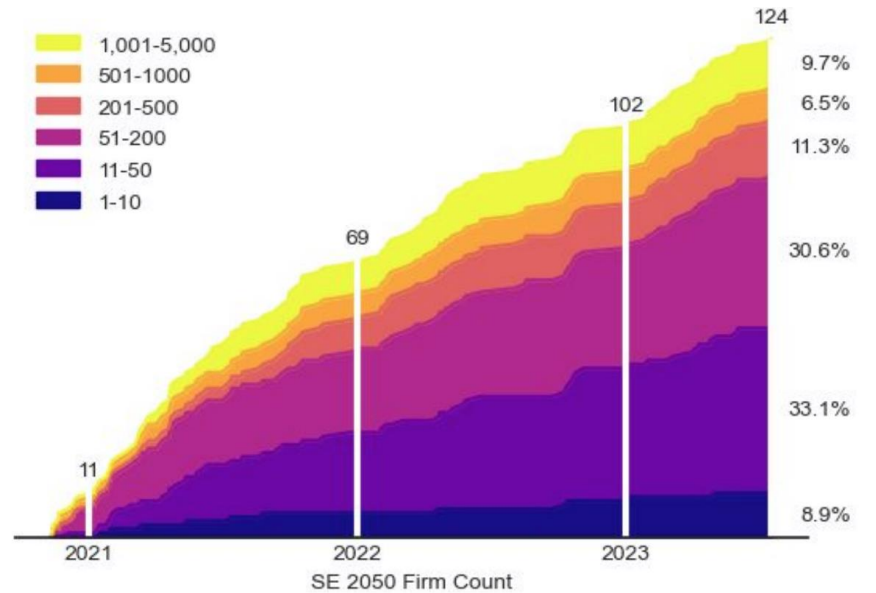


Figure 2: SE 2050 Signatory Firm Commitment Growth and Firm Size Distribution



SE 2050 Goals



EDUCATE

the structural engineering profession on the best practices of sustainable structural design and construction that will lead to net zero embodied carbon by 2050

ENGAGE

in an embodied carbon tracking program within the structural engineering profession thereby enabling the establishment of appropriate embodied carbon reduction targets until net zero is realized

REPORT

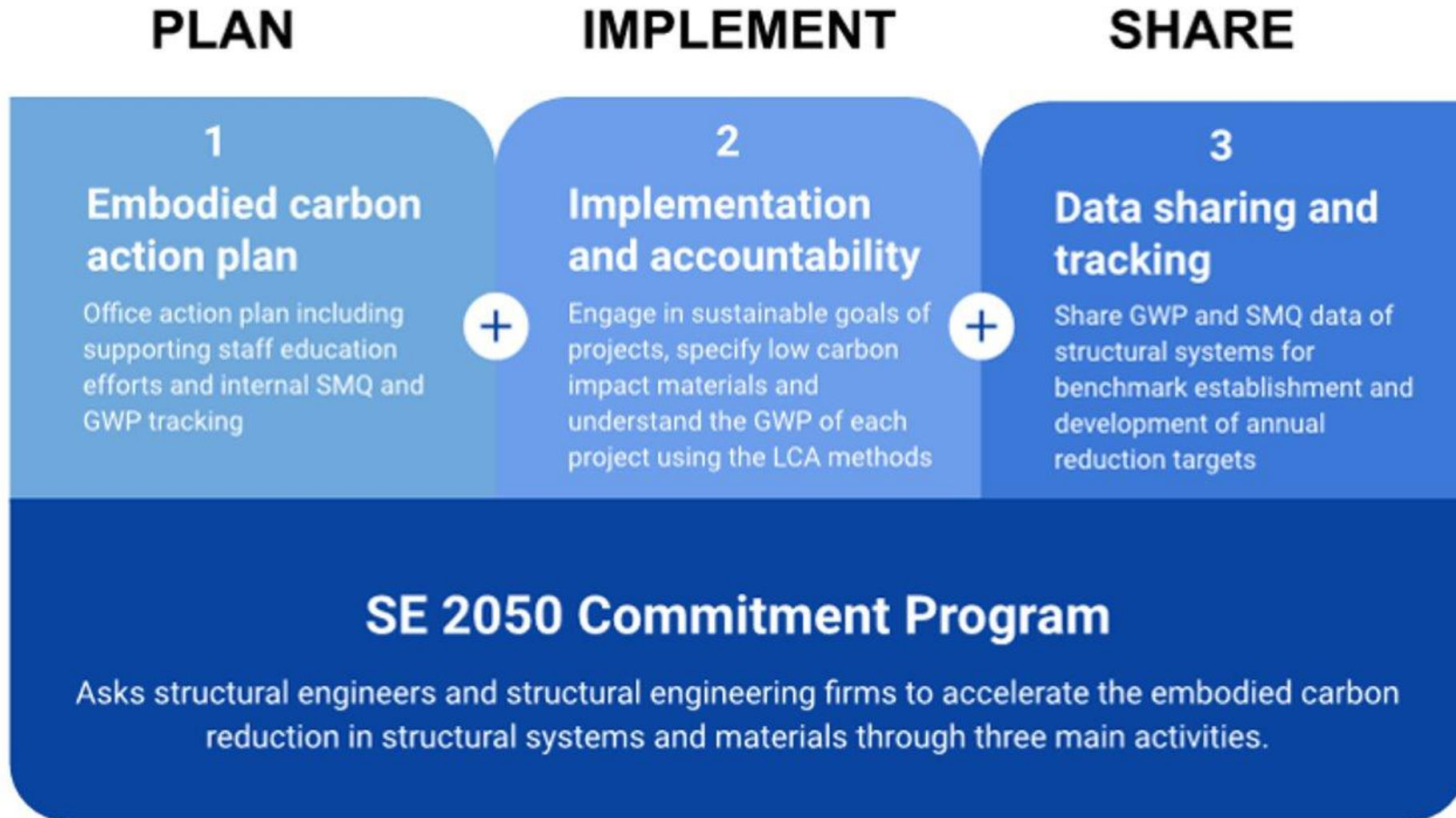
on the current embodied carbon impacts and trends of various structural systems for different regions throughout the country

ADVOCATE

and communicate with clients, the design community, and the public to build an understanding about embodied carbon and impacts of the built environment



SE 2050 Goals



SE 2050 Tools & Reporting



- Athena IE (freestanding software)
- **Tally (Revit Plug-In)**
- Beacon (Revit Plug-In)
- Quartz (open source database)
- **EC3 (free database of Environmental Product Declarations)**
- One Click LCA (web based calculator)
- Embodied Carbon Order of Magitude (ECOM) Tool (web based calculator)
- **Firm Built Spreadsheets**



SE 2050 at Gresham Smith



- Annual update to the Embodied Carbon Action Plan (ECAP)
 - Provides an outline to educate and advocate for reducing embodied carbon in our structures
 - Provides an outline of the firm's commitment to report project data on embodied carbon (2-5 projects per year at the moment)
 - Provides measurable goals to assess the firm's progress in reducing embodied carbon
- Report on 2-5 Projects per Year
- Challenges/Lessons Learned
 - Get owner buy-off early in a project
 - Incorporate sustainability requirements in specifications as soon as possible
 - Location can be a huge factor in what is readily available to the contractor
 - Look for help from others, whether outside or inside your firm



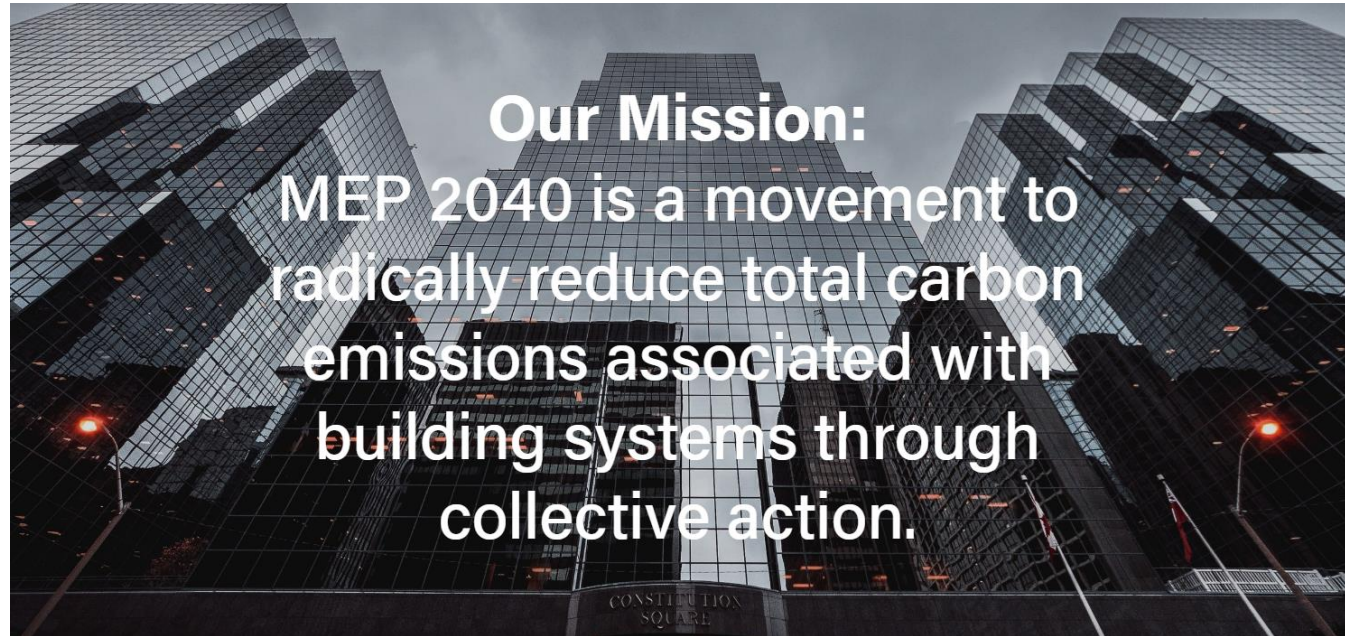
AIA 2030 Commitment



MEP 2040
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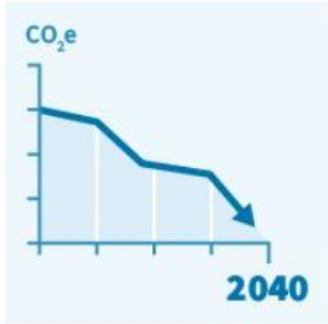
Sustainable design requires action. KMB Design Group is committed to creating long lasting projects that leave both buildings and the environment better than we found them. The MEP 2040 challenge is a great way to hold ourselves accountable for the part we can play in improving the future. Our goal is to educate, improve, engineer and advocate for creative technical solutions to a universal problem.



RESPONSIVE ENGINEERING | PROVEN RESULTS
LICENSED IN 50 STATES



MEP 2040



- Establish a Company Plan to reduce Operational and Embodied Carbon on all projects.
 - Target Zero Carbon by 2040.
 - Measure and Report progress annually.



- Request Low-GWP Refrigerant
 - Similar operating profiles to existing refrigerants.
 - Supported by most major manufacturers.
 - Soon to be mandated in many areas.



- Request Environmental Product Declarations.
 - Considers Life Cycle Assessments of equipment and materials.
 - Supports environmental consideration pre-selection.



- Participate in quarterly MEP2040 forums and CLF community discussion groups.
 - Share projects, lessons, and methods amongst peers
 - Promote the development and advancement of sustainable practices, accountable actions, and professional responsibility.

Challenges and Solutions

AIA 2030 Commitment



MEP 2040
Committing to Zero