# 2026

IMEG
The FUTURE. Built Smarter.

# WHOLE CARBON ACTION PLAN

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Buildings are responsible for nearly **40% of global carbon emissions,** making them a critical focal point in the fight against climate change. As a company deeply committed to sustainability, IMEG acknowledges the urgency of this challenge and embraces its role in reducing carbon emissions through **innovative engineering, strategic planning, and collaborative action.** Our employee-owners are passionate about creating a built environment that is both high-performing and environmentally responsible. We believe that through our expertise in **structural, mechanical, electrical, plumbing, and infrastructure engineering,** we can drive measurable carbon reductions and contribute meaningfully to global decarbonization.

Our mission is to inspire a sustainable future through innovative, transformative project delivery—educating and collaborating across disciplines to create enduring, low-carbon solutions for generations to come.

The **IMEG Whole Carbon Action Plan** (WCAP) serves as our comprehensive strategy for achieving substantial carbon reductions while aligning with industry-leading initiatives including **MEP 2040** and **SE 2050.** Our plan prioritizes tracking, measuring, and mitigating carbon emissions across all project phases, ensuring that sustainability is seamlessly integrated into our design and engineering processes.

By leveraging **data-driven decision-making, advanced analytical tools, and proactive industry engagement,** we aim to set new standards in sustainable engineering and push for continuous improvements in carbon reduction methodologies.

This strategy aligns perfectly with IMEG's mission to create positive outcomes for people, communities, and our planet.

At the core of our approach are two key objectives: (1) developing a **company-wide carbon tracking dashboard** to consolidate essential carbon data and monitor reductions, and (2) establishing a **transparent annual reporting framework** that aligns with evolving industry standards and best practices. Through cross-disciplinary collaboration, continuous learning, and proactive advocacy, we are not only designing low-carbon solutions but also leading a transformative movement toward a more **energy-efficient and climate-conscious future.**



## Rising to the challenges

In the fall of 2021, the Carbon Leadership Forum (CLF) issued the MEP 2040 Challenge, a call to the MEP industry to target net zero carbon in their projects. The following year, IMEG became a founding signatory of the MEP 2040 Commitment, the industry's response to the MEP 2040 Challenge. The Commitment targets the primary sources of a building's MEP-related carbon emissions: operational carbon, embodied carbon, and fugitive refrigerant emissions. While it is widely understood that MEP systems, from heating and cooling equipment to lighting and plug loads, greatly impact a building's operational carbon, MEP systems' embodied carbon and fugitive refrigerant emissions are also significant sources of emissions. Together, these carbon sources are responsible for a substantial portion of global greenhouse gases. IMEG's MEP designers are empowered to study and reduce carbon emissions, eventually taking them to zero—all while serving the well-being and needs of building occupants.

MEP 2040 Committing to Zero

**MEP 2040 Goal: Advocate for and achieve net zero carbon in operational carbon projects by 2030 and in embodied carbon projects by 2040**

### MEP 2040 Commitments:

**1) Establish a company plan to reduce** operational and embodied carbon across MEP systems on all projects, targeting zero by 2040. Measure and report progress against plan annually.

**2) Request low-GWP (Global Warming Potential) refrigerants** when designing systems to reduce or eliminate GHG emissions from refrigerants

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**3) Request Environmental Product Declarations** (EPDs) in project specifications for MEP system components

**4) Participate in a quarterly MEP 2040 Forum** and a CLF Community discussion group to share lessons learned and contribute to a growing body of knowledge

IMEG joined other structural firms across the country in 2021 for the SE 2050 initiative, which targets net zero embodied carbon in structural systems by 2050. Through SE 2050, structural engineers can work to reduce carbon through improving design efficiency and implementing lower carbon materials.

### SE 2050 Goal: Achieve net zero embodied carbon in structural systems by 2050

### SE 2050 Commitments:

**1) 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

**2) 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

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

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

**The AIA 2030 Challenge** launched in 2006 and asked the architecture and building community to drastically reduce the greenhouse gas energy emissions of new and renovated buildings, targeting carbon neutrality by 2030. The resulting AIA 2030 Commitment includes a broadscale initiative for comprehensive reporting of a building's energy metrics in the Design Data Exchange (DDx). IMEG has been a signatory of the AIA 2030 Commitment since 2021.

We have supported this effort by providing energy model data, namely energy use intensity (EUI), to architects of our projects for their reporting. We want to increase our involvement by offering educational resources to our partners, promoting decarbonization within project scopes, and annually reporting all eligible projects through the DDx. Eligible projects include new construction, major renovations, core and shell projects, and interior projects with lighting scope that are at least 1,000 gross square feet and within our design responsibility. Each qualifying project will include completed energy modeling, baseline and predicted EUI data, and all required reporting fields in accordance with AIA 2030 submission criteria.

While IMEG has not committed to a challenge in the infrastructure design sphere, we know site design can affect carbon emissions. Our goal is to begin to account for and quantify the carbon associated with site design and related infrastructure. Combining expertise from civil engineering, surveying, environmental planning and permitting, landscape architecture, and water/wastewater design, we hope to center decarbonization and resiliency through effective design decisions.

*Later sections of this report detail IMEG's actions and plans for supporting the goals and commitments of the MEP, structural, and infrastructure disciplines. Completed tasks are marked with a green check (√).*



# Whole-life, whole-building carbon

IMEG is uniquely equipped to address whole-building carbon emissions by considering the interconnected and cross-disciplinary impacts of operational carbon, embodied carbon, and fugitive refrigerant emissions. This approach can be defined as whole-life, whole-building carbon—whole life meaning carbon emissions from all stages of a building's life cycle are considered, and whole building meaning that both the individual parts and the building as an entire system are considered.

For instance, design choices such as heating and cooling systems not only affect energy consumption but also have associated embodied carbon emissions and refrigerant leakage. Furthermore, elements like insulation and structural framing also contribute to energy efficiency and have their own associated embodied carbon. While there may be design decisions known to reduce one source of carbon, it is not always clear if total carbon is similarly reduced or if there are resulting increases in another source of carbon that counteract the intended reduction.

Given these complexities, IMEG will begin utilizing a comprehensive approach to benchmark whole-life, whole-building carbon across all projects, putting us in a unique position in the industry. Our WCAP is comprised of four core sections, each of which examines a distinct aspect of the effort to reduce and sequester carbon in the built environment.

**EDUCATE:** This section provides information on the internal and external educational resources available or in development. These resources will increase our knowledge about whole-life carbon, decarbonization strategies, and other related sustainability topics.

**REPORT:** The reporting and tracking of carbon data is a key piece of IMEG's WCAP. This section of the plan explains how we plan to calculate, track, and share project-based carbon results.

**REDUCE:** This section explains IMEG's goals and how we will engage in the effort to make reductions in the operational and embodied carbon of building systems.

**ADVOCATE:** This section explains how IMEG plans to share knowledge about operational and embodied carbon and promote reduction within the engineering industry and adjacent construction and developer industries. As our WCAP is firm-led, it is our responsibility as IMEG employee-owners to weigh all available means and methods for lowering whole-building carbon for each project—and we will encourage all employees to adopt these actions.

We hope this report will inspire you to learn more, ask questions across disciplines, design teams, and contractors, and share insight on whole carbon reduction and associated sustainability topics.

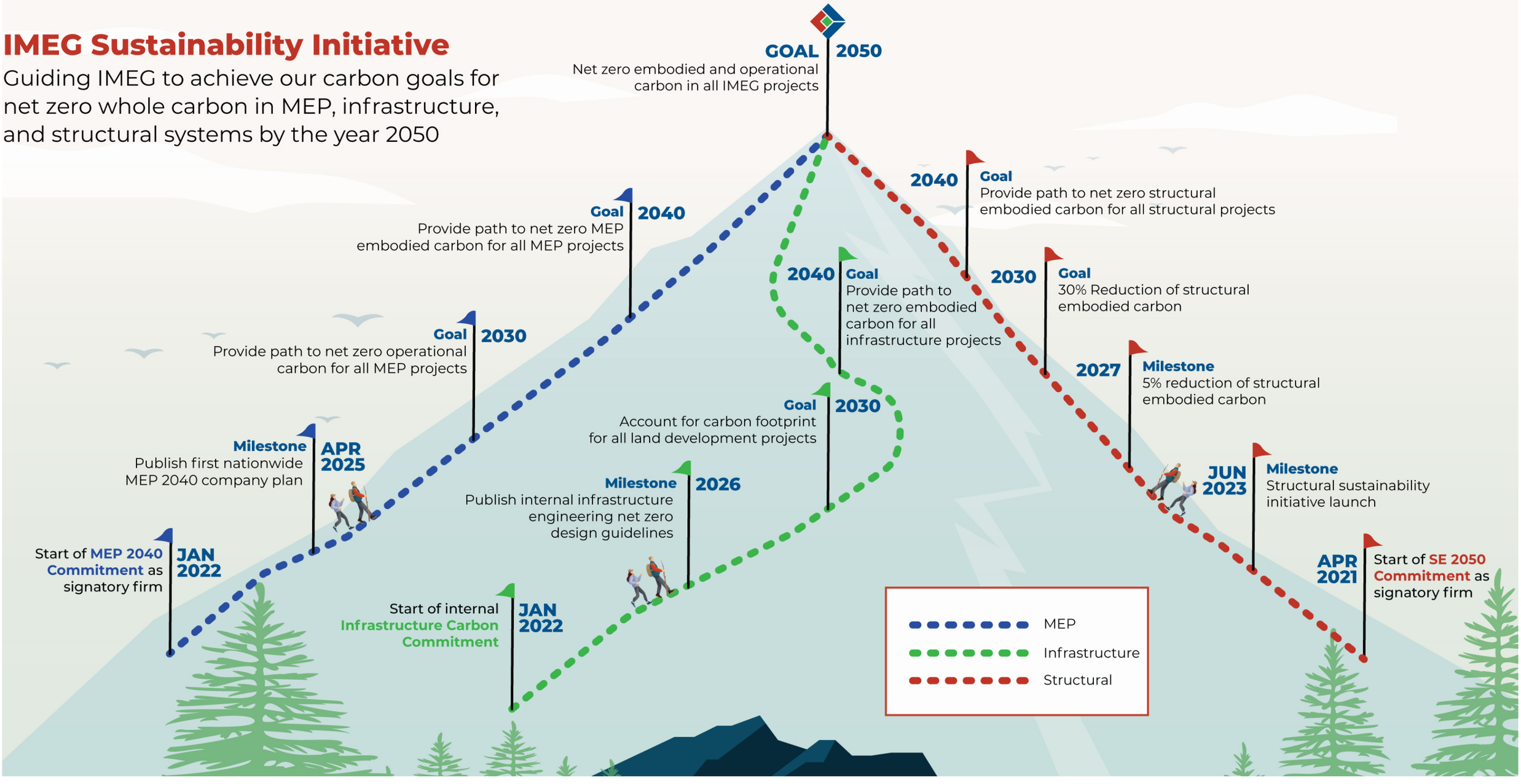
### OPERATIONAL AND EMBODIED CARBON DEFINED

**Operational carbon** refers to greenhouse gas emissions due to building energy consumption. This includes heating, cooling, ventilation, water heating, lighting, and other energy-consuming systems.

**Embodied carbon** refers to greenhouse gas emissions due to the manufacturing, transportation, installation, maintenance, and disposal of all building materials and equipment that go into a building.

# IMEG Sustainability Initiative

Guiding IMEG to achieve our carbon goals for net zero whole carbon in MEP, infrastructure, and structural systems by the year 2050




*The IMEG Sustainability Initiative is a bold, cross-disciplinary effort designed to propel us toward a sustainable future. Our goals include achieving net-zero operational carbon by 2030, net-zero embodied carbon in MEP and infrastructure projects by 2040, and net-zero whole carbon across all IMEG projects by 2050. This graphic outlines key milestones that will guide our journey. To see expanded graphics on the individual structural, MEP, and infrastructure journeys, click on the links at right.*


MEP JOURNEY (EXPANDED)

INFRASTRUCTURE JOURNEY (EXPANDED)

STRUCTURAL JOURNEY (EXPANDED)

1 EDUCATE

# EDUCATE

IMEG's corporate educational philosophy is one of continual learning and frequent sharing of knowledge and experience with each other. We continue learning about sustainability and carbon through our internal education and training programs and actively share our experiences and findings with industry partners and other external outreach. These multidisciplinary internal and external initiatives blend our passion for people and engineering with our passion for the planet.

## INTERNAL EDUCATION

IMEG's internal education initiatives consist of three main goals and related tasks. (*A green check mark (√ ) indicates a completed task.)*

### Goal 1: Develop task force support

IMEG's Sustainable Design Task Force (SDTF) encompasses an interdisciplinary group who strive to evolve our design practice toward low carbon solutions by finding synergies among disciplines in design. On the forefront of innovation and industry knowledge, the task force curates tools and resources for the firm.

**Three subgroups** have been created to develop discipline-focused WCAP goals and tasks and find synergies among the other disciplines in design:

√ **The MEP Sustainability Task Force** drives IMEG's commitment to MEP 2040 and project operational carbon reductions. It continues to expand its reach across IMEG's designers, services and resources.

√ **The Infrastructure Sustainability Task Force,** formed alongside IMEG's 2025 Carbon Action Plan, focuses on sustainable site design, including aspects of civil engineering, landscape architecture, and urban planning. Key actions include coordinating and gathering industry resources, implementing carbon tracking frameworks to be used across projects, and creating educational resources for designers. The task force aims to expand its reach this year with additional members of diverse expertise and location.

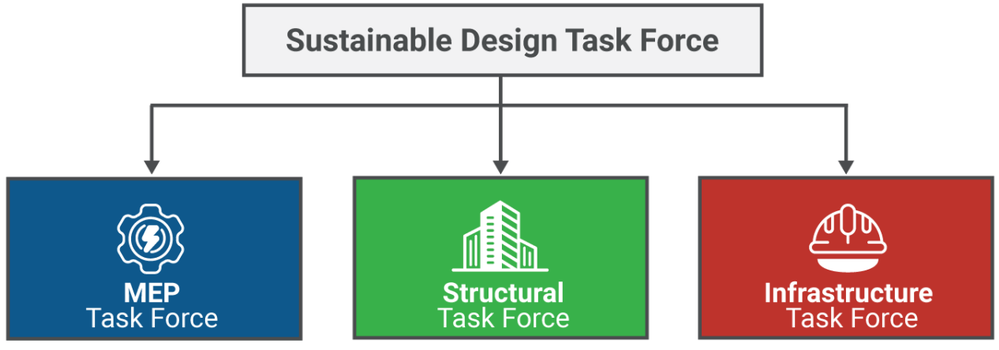
√ **The Structural Sustainability Task Force** (SSTF) is primarily responsible for emboldening the structural embodied carbon reduction effort and driving IMEG's commitment to SE 2050. This group continues to develop and share useful guidance and reference documents regarding embodied carbon, share embodied carbon project data through benchmarking efforts, and enhance sustainable design strategies and resources for structural staff. Key actions include continuing to provide, expand, and update comprehensive design guides toolkits; expanding our library of highly successful structural action items of the Making Change Action Plan (MCAP) implemented in 2023 as part of the Sustainable Structural Initiative (SSI); and maximizing opportunities for embodied carbon reduction considerations across as many projects as possible.


*The KRESA Career & Technical Education Center in Kalamazoo, MI, features a hybrid steel-CLT structural system.*

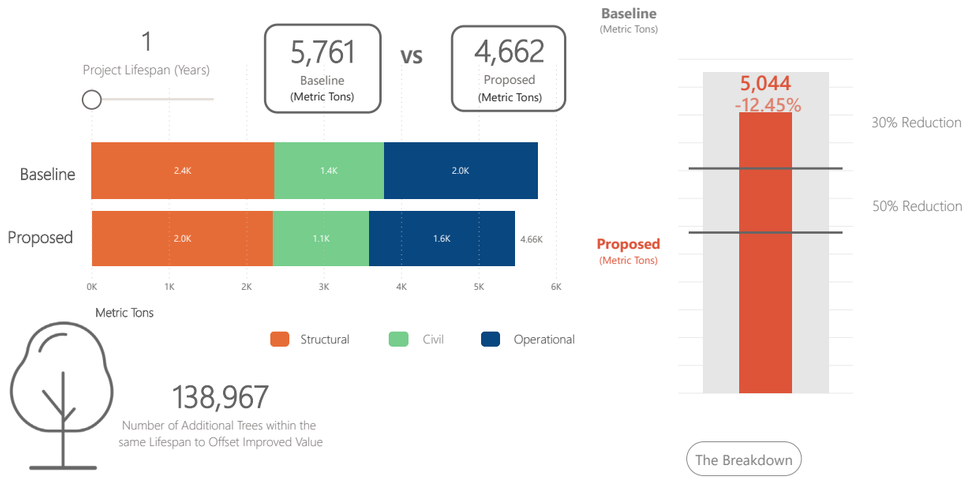
### Goal 2: Expand and strengthen the MCAP into a multi-disciplinary initiative

Incorporating a multi-disciplinary approach for the MCAP will help ensure alignment for IMEG's broader decarbonization efforts. **For MEP,** the plan will implement and refine specification updates to enhance sustainability in mechanical, electrical, and plumbing designs.

**For structural,** targeted action items include specification updates, strategies to challenge conventional design assumptions, and advocacy guidelines. **For infrastructure,** sustainable site development will be improved through exploration of low-impact materials that provide lower embodied carbon, improved water quality and stormwater management, and potentially similar cost and strength as traditional materials.



## ECOMETER TOOL




### Goal 3: Create and gather education resources and tools

IMEG strives to ensure our education program accommodates all types of learning styles and all design disciplines. Driven by the SDTF, this growing resource includes presentations, on-demand videos, written guides, handouts, blogs, and articles.

## MULTI-DISCIPLINARY INITIATIVES

**Two completed tasks have resulted in tools** to enhance sustainable design across all disciplines:

√ **The Ecometer** increases knowledge about sustainable development and is incorporated into the conventional workflow of designing and consulting. Its interactive dashboard estimates early carbon emissions for structural, MEP, and site design attributes. It also provides a high-level understanding of carbon and how simple alternatives can make a big difference in reducing our carbon footprint.

√ **Meg, IMEG's internal AI chatbot,** is designed to help project teams plan, design, and document higher-performance, lower-carbon buildings by quickly surfacing trusted, IMEG-approved sustainability guidance—including decarbonization strategies, electrification pathways, embodied carbon considerations, high-efficiency system options, water conservation measures, and applicable certification/compliance requirements—and converting that information into project-ready deliverables like early-phase sustainability roadmaps, basis-of-design language, specification edits, LEED/WELL/Fitwel or owner standard checklists, and concise narratives for proposals and client presentations.

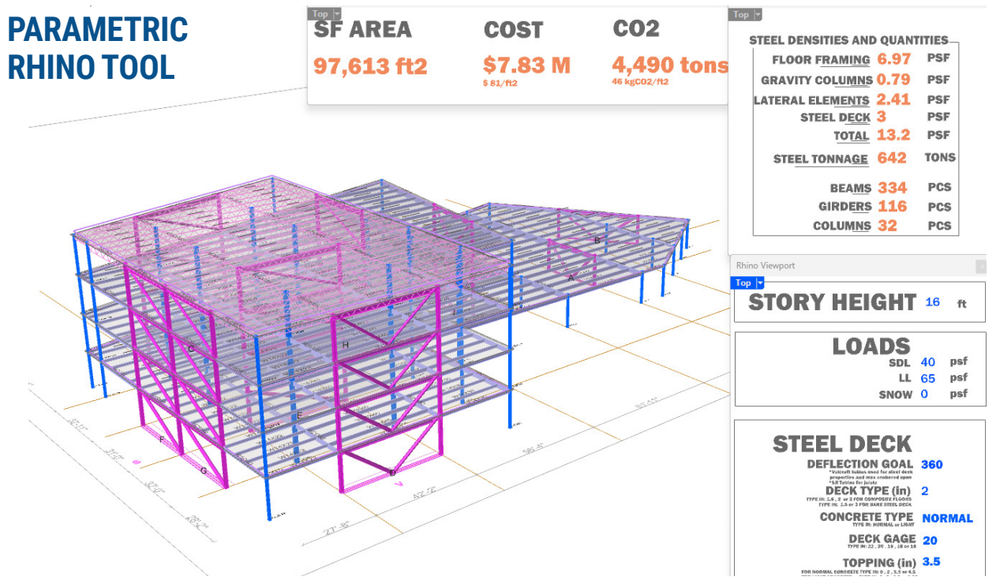

**Additional tasks: 1) Create required sustainability training** to expand the required curriculum on foundational knowledge across all engineering disciplines. This will be integrated into our existing mentorship and leadership programs and will include topics such as carbon emission effects, energy grid basics, introduction to LCAs, MEP embodied carbon, and carbon sequestration. **2) Create several comprehensive courses** to build on previous educational resources provided to staff. The curriculum will provide participants with certificates of completion if not included with other formal internal training.

## STRUCTURAL INITIATIVES

**Two completed tasks** have resulted in tools to quickly compare alternative designs with varying parameters and materials. √ **The Parametric Rhino Tool** develops parametric structural engineering models to assess structural performance, cost, and environmental impact for entire buildings by outputting real-time structural checks, cost, and CO2 estimates. These models allow us to quickly compare alternative designs and identify the most efficient solutions. We intend to use this tool internally and externally to assist IMEG staff in making educated decisions quickly and show the impact of preliminary planning or modifications to clients. The values the parametric program uses are based on the SE 2050 Embodied Carbon Estimator.

√ **The EcoFrame Tool** presents a high-level understanding of how structural system choices contribute to embodied carbon emissions and guides users to select structural alternatives that can significantly lower a building's carbon footprint. This tool can be used at any point during a project and is especially useful for comparing proposed and baseline structural systems. Users can adjust the selection of materials and structural elements to get the embodied carbon emissions for the five highest typical contributing structural elements and see how changes to selections affect embodied carbon.

**Task: Utilize IMEG's Structural Embodied Carbon Database to record global warming potential (GWP) emissions.** This data will be used as references for future projects and establish a baseline for embodied carbon by material and building type. *(For more information, see the Report section.)*



## MEP INITIATIVES

Three completed tasks created MEP sustainability tools that continue to be enhanced:

√ **The Refrigerant Tool** quantifies a project's expected fugitive refrigerant emissions, based on the design, to promote educated decisions on refrigerant-containing equipment such as heat pumps and chillers.

√ **The MEP Embodied Carbon Calculator** will be integrated to provide automated embodied carbon calculation workflows within Revit. The methodology is informed by IMEG's participation in the 2025 pilot program, during which embodied carbon was quantified for a representative project in accordance with the Beginner's Guide to MEP Embodied Carbon published by the MEP 2040 Committee.

√ **The EUI Analysis Tool** provides estimates of a building's energy use intensity (EUI), derived through a comprehensive averaging process of data from reputable sources such as CBECS, ASHRAE 100, PNNL, and Energy Star. The resultant EUI provides a realistic value to use as a benchmark for the project's energy performance and carbon emissions goals and can be used to better understand operational energy use.

**Additional tasks: 1) Add carbon to equipment schedules for any equipment that utilizes refrigerant** Existing information on refrigerant type and charge will be used to calculate a carbon emissions value. This will increase awareness and provide a better understanding of the carbon impact of refrigerants among various equipment types and manufacturers.

**2) Incorporate MEP 2040-related actions into workflows** to help projects stay on track and adhere to our goals. A pilot version of the checklist will be released to train staff. Examples of items include:

- Inform project owner and team of IMEG's overall carbon reduction goals.
- Send EPD and low-GWP advocacy letters to specify manufacturers
- Calculate estimated refrigerant emissions
- Report EUIs and operational carbon emissions

## INFRASTRUCTURE INITIATIVES

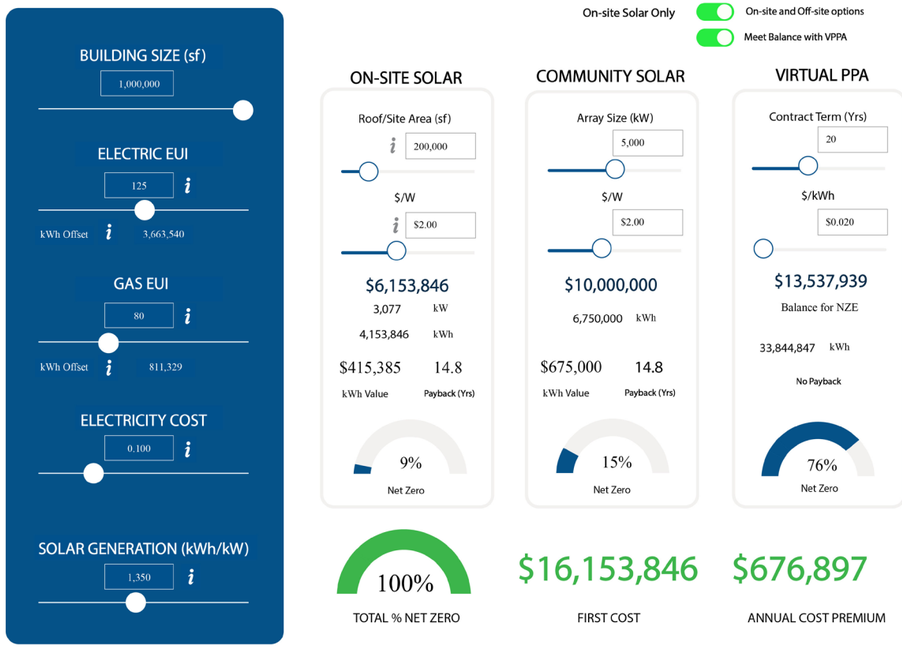
Two infrastructure education tasks are complete:

√ **Generate resources for IMEG's library.** Sustainable design references from IMEG project experience and industry-wide programs were added into Meg's database for easy access. Industry-wide programs include Institute for Sustainable Infrastructure's Envision, U.S. Green Building Council's SITES, American Society of Landscape Architects (ASLA), and Landscape Architecture Foundation (LAF).

√ **Create a Stormwater Pond and Plant Selection Meg Agent** to move through the initial concept design of a stormwater pond. By requesting a project's criteria and design goals, Meg can produce a general layout of the pond, including suitable plant species and quantities. The tool will be refined with examples and test projects and integrated into designer workflow.

**Additional tasks: 1) Explore low-carbon materiality** and produce references for infrastructure engineers on options, including low-carbon, high-strength pavement **2) Create educational content** on the impact of site design on the carbon footprint of a project and share with clients **3) Encourage designers to obtain relevant certifications** (Envision, SITES, LEED, WELL)

## NET ZERO ENERGY CALCULATOR

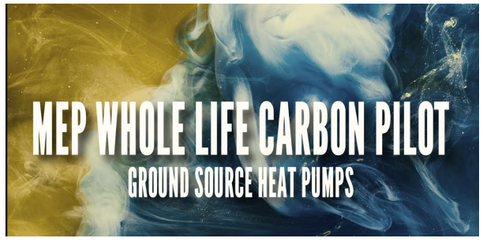



## EXTERNAL EDUCATION

**Goal 1: Develop education materials |** This is supported by our design tools, from which we extract information to share with clients and other firms. Our intent is to continue this outreach and create additional public resources that help educate and guide all project stakeholders toward more sustainable designs.

Three tasks have created tools to help clients and staff understand various sustainability-related topics: √ **The Inflation Reduction Act (IRA) Estimation Tool** provides project teams with insights into the tax benefits that align with their project. It facilitates the calculation of estimated savings for the project based on optimal tax reduction strategy. √ **The Net Zero Tool** (pictured above) helps with early planning and feasibility of solar PV for a building site. Many owners want to see what solar PV means for their project—the feasibility, size, cost, and ROI. This tool provides a pathway to coordinate faster and easier. √ **The Embodied Carbon Webinar Series** continues to be presented to various clients, partners, and owners. It started with the basics (sources of building carbon emissions, why this is important, what is and why conduct an LCA), discusses the principles of carbon reductions, and concludes with embodied carbon and LCA innovations and challenges (e.g., quantifying embodied carbon of MEP systems).

**Goal 2: Participate in external working groups and communities** such as MEP 2040, SE 2050, ASHRAE, ASCE, SITES, and ASLA, all of which provide industry opportunities to collaborate, share project findings, and learn from obstacles. To date, we have completed two tasks and are engaged in another:




**√ IMEG participated in the 2025 MEP Whole Life Pilot Program,** which involved a whole life carbon assessment for a representative project. The analysis quantified: 1) Operational carbon emissions (modeled energy use and associated emissions factors), 2) embodied carbon of MEP systems (material extraction, manufacturing, upstream impacts), and 3) fugitive refrigerant emissions (lifecycle leakage and end-of-life losses). Calculations were conducted in concert with the MEP 2040 Committee's Beginner's Guide to MEP Embodied Carbon. Outcomes informed development of internal calculation templates, documentation standards, and QA/QC procedures to support scalable implementation across future projects.

**√ Engage with the MEP 2040 Initiative |** We maintain active participation in the MEP 2040 quarterly forums and technical working groups to support continuous improvement in whole life carbon assessment methodologies for MEP systems. Engagement will include monitoring updates to calculation protocols, benchmarking guidance, reporting frameworks, and tool development related to operational, embodied, and refrigerant-associated emissions. Knowledge gained will be integrated into internal standards, calculation workflows, and quality control procedures to ensure alignment with current industry best practices and emerging consensus methodologies.

**Additional task: Join Carbon Leadership Forum hubs |** We are encouraging staff who live near Carbon Leadership Forum hub locations to join the local hub. This will provide opportunities to connect with carbon professionals, expand LCA expertise, explore low-carbon projects and materials, and stay informed on CLF's latest carbon research.

2 REPORT

# REPORT

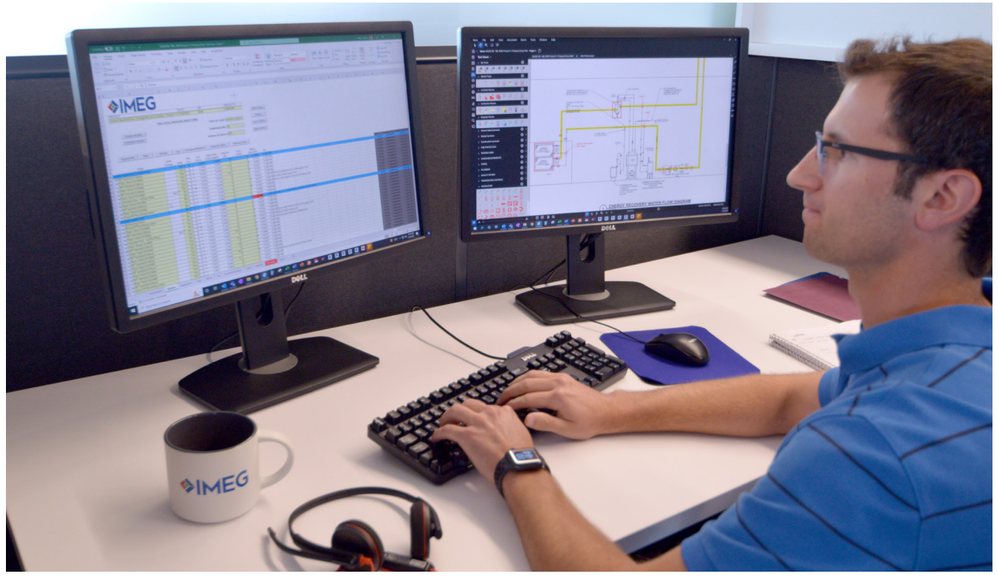
IMEG's approach to whole life carbon tracking features the development of a company-wide dashboard, automation of carbon calculations, and standardization of annual reporting in alignment with SE 2050, MEP 2040, and the Embodied Carbon Harmonization and Optimization (ECHO) Project. Our efforts focus on enhancing data transparency, integrating automation, and implementing targeted carbon reduction strategies across structural, MEP, and infrastructure engineering disciplines. By leveraging internal tools, AI-driven reporting, and industry collaboration, we aim to streamline carbon assessments and drive meaningful emissions reductions across all our projects.

## MULTIDISCIPLINARY INITIATIVES

### Goal 1: Incorporate carbon metrics into our enterprise-level data repository |

We will use these metrics and quantities from BIM models to benchmark total carbon for each project. This will allow us to break down carbon from each discipline and start tracking a whole carbon number for each project.

To support this goal, we have **√ created a pilot version of a whole carbon dashboard,** which will provide the foundation for operational and embodied carbon reporting. The new dashboard will be consolidated with existing resources such as the Sustainability & Energy Team's Project Portal, to support its carbon goals.




### Goal 2: Report carbon emissions annually

To reduce our carbon emissions, we must establish a baseline for our current annual emission rate.

**Task 1: Report carbon emissions in alignment with its commitments |** While reporting guidelines are established for SE 2050, they are not yet defined for MEP 2040. To address this, we will develop a temporary reporting approach for MEP-related carbon emissions and closely monitor updates from the ECHO Project to ensure compliance with future reporting requirements. The ECHO Project, launched in 2023, aims to standardize and align carbon reporting frameworks across organizations. Participating groups include SE 2050 and MEP 2040, as well as AIA 2030, Building Transparency, the Carbon Leadership Forum, the International Living Future Institute, USGBC, and ASCE. In 2024, ECHO released recommendations for LCA alignment and the ECHO Reporting Schema, which IMEG is committed to meeting. Currently, a description of the ECHO Schema fields has been published, with further development and implementation pending.

**Task 2: Automate the reporting process |** Most carbon analysis today is done as an additional service for the owners who are willing to invest additional money to prioritize carbon reduction. Achieving sustainability and decarbonization at scale, however, must be part of design across all projects. We are focused on automating our design processes and storing the metrics in the data repository (mentioned earlier) to achieve the goal of obtaining the carbon benchmark for every project. We are developing Revit schedules that will provide automatic quantity takeoff in real time during the design process to show engineers how even small changes can have big impacts. Real-time data can also be stored and leveraged by AI to suggest changes on future projects. These tools will also allow us to report our project results, benchmarks, and savings to help owners make informed decisions. Reporting at enterprise level will inform decarbonization for both IMEG and the SE 2050, MEP 2040, and AIA 2030 initiatives.

*Elco Yards mixed use redevelopment, Redwood City, CA*

## STRUCTURAL INITIATIVES

**Goal: Annual project submission to SE 2050 database |** To support benchmarking efforts, IMEG is expanding its structural embodied carbon database using GWP calculations as the foundation for tracking and analysis. A standardized process has been developed to evaluate 30 completed projects each calendar year. This initiative aims to assess current structural design practices from an embodied carbon perspective, enabling the benchmarking of data across various building types and superstructure materials.

**Task: Submit 30 projects to the SE 2050 database**
Identify at least 30 projects from the previous year to perform calculations for the next round of submission.

We will choose projects with geographical and structural team diversity, along with these parameters:

- Market: Housing, healthcare, education, and commercial
- Material: Concrete, steel, or light-frame wood superstructure
- Size: New construction, 20,000 sq ft or greater
- Design phase: Ideally 100% CD, minimum 50% CD

## MEP INITIATIVES

Reporting carbon associated with our projects' MEP systems (operational, MEP embodied, and fugitive refrigerant) is integral to understanding and reducing the built environment's carbon footprint. These three sources of MEP carbon are emitted and calculated distinctly, but their interactions make it imperative to consider them concurrently.

**Goal 1: Measure operational carbon |** To reach net-zero for embodied carbon by 2030, we need to understand the current emission data.

**Task: Create company-wide EUI and operational carbon benchmarks using modeled energy data**
IMEG tracks EUI data for Sustainability & Energy Team projects using energy models. The next step is to expand this effort company-wide by collecting modeled EUI data for all projects and calculating associated operational carbon emissions. This will establish a benchmark for projected operational carbon emissions, guiding future reduction strategies for both internal and external clients. We also seek to assess project performance post-construction by exploring methods to collect actual EUI and carbon emission data. Comparing real-world outcomes to energy model projections will provide valuable insights into the accuracy of forecasts and the true carbon impact of our projects.

### Goal 2: Measure MEP embodied carbon

Measuring embodied carbon in the MEP industry remains a significant challenge due to the limited availability of EPDs, system complexity, and the need for integration with existing LCA software. IMEG is actively developing MEP LCA methodologies to help drive broader industry adoption. To advance this effort, we have created an Embodied Carbon Calculator for MEP systems, utilizing common rules of thumb and estimates to provide insight into the embodied impacts of our MEP designs. We also are exploring options to quantify duct and piping materials in real time for every Revit project. This will allow us to benchmark quantity and carbon estimates for every project, with the metrics also collected in our data repository for reporting and education purposes.

**√ Task: MEP Whole Life Carbon Pilot |** IMEG participated in the MEP 2040 Whole Life Carbon Pilot, conducting an MEP whole carbon assessment using One Click LCA and MEP 2040's forthcoming Beginner's Guide to MEP Embodied Carbon. This pilot helped refine MEP LCA processes with the goal of integrating MEP carbon assessments into engineer training and project workflows. By quantifying MEP contributions to embodied carbon and identifying key impact areas, IMEG will be well-positioned to develop effective reduction strategies for future projects.

**Task: EPD Advocacy |** IMEG will send letters to a list of commonly used MEP equipment manufacturers requesting that they publish EPDs—an initiative that began in 2024 that will be expanded and tracked. Increased availability of EPDs will enhance access to MEP embodied carbon data, supporting more comprehensive MEP LCAs and improving the accuracy of embodied carbon calculations.

**Goal 3: Calculate and reduce project carbon emissions due to refrigerants |** Refrigerant leakage, particularly from fugitive emissions, is increasingly recognized as a significant contributor to a building's carbon footprint. It is essential to quantify these emissions and integrate this data into design decisions using a whole life carbon approach to minimize environmental impact. We plan to add refrigerant charge, type, and the carbon impact to our Revit schedules for all refrigerant-using equipment.

**√ Task: Develop a fugitive refrigerant tracking tool and create a benchmark |** In 2024, IMEG developed a pilot Fugitive Refrigerant Calculator to estimate the lifetime greenhouse gas emissions from refrigerant-containing equipment. This year, we plan to use the calculator on 10 to 15 projects to establish a benchmark for projected emissions, gather feedback for further tool development, and create a standardized approach for calculating and documenting fugitive refrigerant emissions.

### Goal 4: Report carbon emissions annually

No standard process exists for reporting emissions to MEP 2040. IMEG plans to publish annual updates in future iterations of the WCAP. **Our task is to stay current on the ECHO project** and adhere to reporting guidelines as they are adopted by MEP 2040.

## INFRASTRUCTURE INITIATIVES

**Goal: Bring infrastructure embodied carbon to the forefront |** Embodied carbon is not being tracked or reported for site design. Our goal is to ensure it is added to the entire conversation. Through strategizing ways to quantify embodied carbon for site design, we can determine how best to make informed decisions in the design and construction process.

**Task: Create a site carbon tracking framework** to easily measure a project's site carbon, including hardscape and landscape throughout the design process. We will measure and report these values for five different projects and integrate the data into the whole carbon reporting dashboard.

REDUCE 3

# REDUCE

IMEG is committed to reducing carbon in the built environment through innovative design, advanced tools, and the dedication of our passionate employee-owners. Our approach integrates sustainability at every stage of our projects, leveraging cutting-edge resources and expertise to drive impactful change. By continuously developing and refining tools that enhance carbon-conscious decision-making, we empower our teams to create high-performance, low-carbon solutions.

Through collaboration, knowledge-sharing, and a steadfast commitment to progress, we turn our collective passion for engineering and the planet into meaningful action that is aligned with IMEG's cultural behavior principles of transparent communication, creating value, and sustainability & stewardship.

### STRATEGIES FOR LOWER ON-SITE EMBODIED CARBON

- **Low-embodied carbon concrete** for pavement, roads, structures
- **Mass timber or recycled steel** for buildings and structures
- **Low/zero-carbon refrigerants**
- **HDPE piping and retention** for stormwater systems
- **Trees, shrubs, rain gardens,** and green roofs
- **Use of local building materials**
- **Reuse of materials** such as brick, metal, and wood
- **Site optimization** (e.g., minimizing idle truck and pump time, etc.)
- **Modular construction**

## MULTIDISCIPLINARY INITIATIVES

### Goal 1: Reduce emissions through early project benchmarking

**Task: Utilize existing IMEG carbon databases |** Utilizing carbon benchmarks from past projects provides IMEG's designers with valuable insights that drive more informed and strategic decision-making in achieving and exceeding carbon reduction targets. By analyzing real-world data on embodied and operational carbon across structural, MEP, and infrastructure disciplines, our teams can identify trends, set realistic performance expectations, and apply proven low-carbon strategies to new designs. These benchmarks serve as a roadmap for continuous improvement, allowing designers to compare proposed solutions against past successes and refine their approaches for even greater impact. By leveraging this historical data, we ensure projects align with industry best practices and empower our teams to deliver increasingly sustainable, high-performance designs.

### Goal 2: Reduce emissions through updated project specifications

**Task: Update structural, MEP, and infrastructure specifications to include sustainable, energy-efficient options |** In 2026, we will review all mechanical, structural, and infrastructure specifications to align with decarbonization best practices. Practices that carry tangible cost premiums will be included for designers to select easily. Our goal is to simplify the

*Heat pumps are utilized at the Poudre School District's new middle/high schools in Timnath and Wellington, CO.*

implementation of decarbonization strategies by removing the need to find the sustainable option yourself. This effort will coincide with general notes, flow diagrams, details, and schedules. Structural specifications have been preliminarily updated with sustainability language added; further revisions based on industry updates will be reviewed and incorporated annually. Mechanical and infrastructure specifications and design standards will be reviewed and updated.

### Goal 3: Investigate how MEP and structural disciplines can support each other for holistic reductions

**Task: Prioritize actions with whole carbon synergies and greatest impact |** Carbon reduction is typically discipline focused; we will search for a greater, whole-carbon impact through the interplay of embodied and operational carbon. For example, specifying smaller mechanical equipment may reduce the weight of required structural components, therefore reducing both MEP and structural embodied carbon. However, the effects of the equipment's refrigerant selection as well as the long-term fugitive emissions also should be investigated to better understand carbon tradeoffs.

## STRUCTURAL INITIATIVES

### Goal 1: 5% reduction in structural embodied carbon by 2027

**Task 1: Establish benchmarks for project types and material types by the end of 2026 |** We desire and need to increase IMEG's embodied carbon database to create a standard embodied carbon baseline that will encompass typical building types and superstructure materials. To do this, we are looking to encompass concrete and steel for the primary superstructure building materials and three different building use types. (See the REPORT section for more details about the project parameters). We strive to ensure that our benchmarks will be comprehensive and consistent to ensure reliability for all future reduction efforts.

**Task 2: Quantify 5% reduction through tools (Revit, Excel, Power BI) |** Summarize and share with the IMEG structural group

### Goal 2: 30% reduction in structural embodied carbon by the year 2030

**Task 1: Identify strategies for increasing reductions and share with IMEG staff** through quarterly action items in the MCAP

**Task 2: Create method to ensure scalable reductions for the next five years and beyond** by developing a scalable, implementation-ready guide that systematically reduces embodied carbon by prioritizing low-cost to no-cost material swaps, specification adjustments, and design efficiencies. The guide will establish standardized benchmarks, preferred material alternatives, supplier engagement strategies, and decision-making workflows that integrate seamlessly into existing project delivery processes. By embedding these strategies into early design phases, procurement standards, and quality control checkpoints, we will ensure measurable carbon reductions that are repeatable, financially responsible, and continuously improved through performance tracking and feedback loops.

**Task 3: Establish a process for calculating structural embodied carbon reductions against IMEG project benchmarks** by leveraging a centralized and continuously expanding database of previously calculated projects. This evolving benchmark database will serve as a living performance baseline, allowing new designs to be evaluated using consistent methodologies and aligned design standards. By embedding benchmark comparisons directly into the design workflow, teams can perform "as-designed" carbon assessments early and iteratively, using cumulative project data to inform material selection, structural system optimization, and specification decisions. This scalable, data-driven framework will ensure measurable, comparable, and progressively improving embodied carbon performance across future projects.

### Goal 3: Update sustainability language in specifications

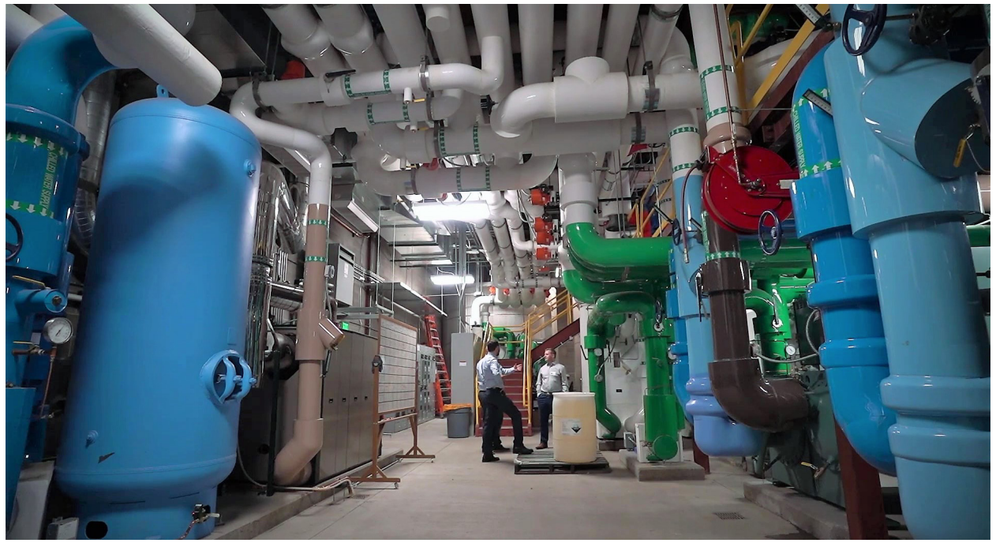
**√ Task 1: Specifications for concrete and steel |** Our concrete and steel specs now include Portland Limestone Cement as the preferred option; language to request or require EPDs; and options for GWP maximums for concrete mixes or steel members.

**Task 2: Monitor updates and include new sustainability** specifications guidance.

**Task 3: Finalize and implement maximum concrete GWP table** for the general notes and specifications guidance, such as the Specification Strategies for Structural Steel Embodied Carbon Reduction document from AISC

### Goal 4: Create material & project phase design guides

Two tasks support this goal: **1) Develop material-specific embodied carbon reduction design guide,** and **2) Develop design phase embodied carbon reduction design guide**



## MEP INITIATIVES

**Goal: Reduce project carbon emissions through incorporating life-cycle-based decision-making into the MEP design process. |** IMEG aims to make whole life design decisions by individually calculating operational, embodied, and refrigerant emissions, then considering them holistically to drive meaningful carbon reductions. We are committed to researching, advocating for, and implementing reduction strategies for each source of MEP carbon, validating reductions through whole life carbon assessments. Our vision is to one day provide all projects with a path to net zero carbon by first minimizing all sources of carbon as much as possible and providing data-based carbon emissions values that a client may choose to balance through renewable energy production or responsible carbon offsets.

**√ Task 1: Participate in the MEP 2040 Whole Life Carbon Pilot |** The MEP Whole Life Carbon Pilot was an exciting step toward accurately assessing our MEP systems' embodied carbon and will help inform embodied carbon reduction strategies.

**Task 2: Research low-GWP refrigerant equipment |** The market for equipment that contains refrigerants is evolving, partly due to new policies and demand for low-GWP refrigerant. We must stay up to date on the latest low-GWP refrigerant equipment and provide our projects with the lowest carbon options available.

**Task 3: Advocate for proper refrigerant management on projects, per EPA's Significant New Alternatives Policy (SNAP) requirements |** Provide low- or lower-GWP refrigerant equipment options to clients

**Task 4: Continue incorporating energy conservation measures into project workflow for all projects |** IMEG is committed to delivering energy-efficient solutions that reduce operational carbon emissions and clients' operating costs. We will continue to prioritize low-operational carbon designs, making energy efficiency the standard in all our projects.

**Task 5: Research/incorporate MEP embodied carbon reduction strategies into project workflow**
The MEP industry is still refining processes for measuring embodied carbon, with the goal of reducing it once it can be accurately quantified. In the interim, strategies such as optimizing equipment placement to minimize duct/piping/refrigerant runs and downsizing equipment offer ways to lower MEP embodied carbon. By reducing material weight in MEP systems, we can likely reduce embodied carbon. Once our methodology for MEP whole carbon assessments is finalized, we will aim to validate these strategies with empirical data.

## INFRASTRUCTURE INITIATIVES

**Goal 1: Create standard references that provide the designer with low-carbon products |** Two tasks will begin the process: **1) Explore sustainable, low-carbon materials,** particularly for concrete paving, asphalt, and landscaping, and **2) Detail the initial specifications of these materials** and make resources accessible to IMEG designers for smooth project implementation

**Goal 2: Incorporate landscape design to maximize the carbon sequestration potential for a project | Task: Establish a protocol for quantifying carbon sequestration** potential as standard practice on our projects

**Goal 3: Set a baseline or standard for site design carbon | Task: Quantify the carbon savings** and potential cost savings from the implementation of low-carbon materials and design strategies

ADVOCATE 4

# ADVOCATE

To achieve our sustainability goals, IMEG should keep advocacy at the forefront of our actions. It is important for us to share the goals and intentions of SE 2050, AIA 2030, and MEP 2040 with our clients, internal staff, and suppliers, to encourage them to act. We also must include outreach about what IMEG is doing to track and reduce carbon emissions in the various building systems and site components of our projects.

## MULTIDISCIPLINARY INITIATIVES

**Goal 1: Advocate for whole building carbon emissions reductions with clients | Task:** Develop standard language for client advocacy and educate them on IMEG's commitments and goals

**Goal 2: Leverage marketing opportunities**

**Task:** Update marketing materials to better represent decarbonization and our multi-disciplinary approach

## STRUCTURAL INITIATIVES

We must request the tracking, reporting, and sharing of structural embodied carbon data and propose reductions where it makes sense. An opportunity exists on every project to reduce embodied carbon and possibly sequester carbon. IMEG will continue to encourage project teams to measure embodied carbon and implement reduction strategies where possible, with the following goals to support these efforts.

**Goal 1: Continue to converse with our clients about opportunities to reduce embodied carbon in their projects | Task:** Formulate method for tracking touchpoints and sharing findings

**Goal 2: Publicly declare IMEG as a member of the SE 2050 Commitment | √ Task:** A podcast and blog have been posted on the IMEG website and shared on LinkedIn.

The **Future**. Built **Smarter**.

**Goal 3: Create a structural sustainability brochure to send to clients to share IMEG's structural sustainability approach √ Task:** Two one-page documents were created as a part of the MCAP and the Structural Sustainability Initiative (SSI). One document explained IMEG structural groups' general approach for sustainability and embodied carbon reductions and the other outlined housing-market-specific structural embodied carbon reduction strategies for residential projects.

## MEP INITIATIVES

**Goal 1: Identify manufacturers and equipment with EPDs |** MEP 2040 has published a list of manufacturers that provide EPDs for their equipment. IMEG will reference this list and contact manufacturers to request EPDs where they are not currently available. The long-term goal is for all specified equipment in our designs to include an EPD. **Three tasks** will support this goal: **1)** Send EPD advocacy letter to common manufacturers, **2)** Develop an advocacy tracking system, **3)** Incorporate EPD spec language in IMEG spec standards.

EPD
ENVIRONMENTAL PRODUCT DECLARATION

**Goal 2: Advocate for industry-wide development of of equipment that uses low-GWP refrigerants |** This aligns with another one of the MEP 2040 commitments, with the intent that the industry will respond to our collective advocacy and prioritize development of equipment that uses low-GWP refrigerants. **Task:** Develop an IMEG refrigerant advocacy letter and send it to common manufacturers; log the advocacy efforts with an internal tracking system.

## INFRASTRUCTURE INITIATIVES

**Goal 1: Advocate with clients on implementing low-carbon options and focus on carbon sequestration | Task:** Discuss this topic in design meetings for five different projects.

**Goal 2: Advocate at industry-wide events Task:** Encourage our designers to speak at industry events. Using project examples and situations, we hope to deepen others' understanding of optimizing site carbon.

# REFLECTIONS ON OUR EFFORTS

During the past year at IMEG, we have focused on aligning disciplines to unify our decarbonization approach. Through project data tracking, we have enhanced our ability to articulate the interplay between embodied and operational carbon across building systems and their surroundings.

**IMEG's Structural Division** continued strengthening the Structural Sustainability Initiative (SSI) in 2025 by issuing additional action items through the MCAP, with a key focus on developing structural material quantity schedules in Revit. By leveraging Revit's ability to calculate quantities of modeled elements, we can extract material takeoffs and use custom tools to calculate product-stage embodied carbon for benchmarking. This workflow supports the annual submission of embodied carbon data for 30 projects to the SE 2050 database—a number we intend to increase over time—and expands our internal benchmarking dataset, which can be filtered by market sector and superstructure material to help engineers anticipate likely outcomes on current projects. Understanding how we design today enables more targeted embodied carbon reduction strategies and supports progress toward net-zero embodied carbon emissions in structural systems by 2050.

**The MEP industry** is at a pivotal moment with respect to understanding and addressing the significant impact on climate change caused by its emissions. For too long, the MEP industry has been excluded from WBLCAs. The data wasn't available. There was no methodology for MEP embodied carbon. The industry wasn't ready. MEP systems are incredibly complex. Despite these challenges, IMEG—which has long worked to actively reduce the operational emissions of our projects—recognizes that immediate action is needed on embodied and refrigerant emissions to achieve net zero MEP embodied and operational carbon by 2040.

**IMEG is committed to resilient infrastructure** that protects communities and the built environment as climate-driven hazards become more frequent and severe. Integrating resiliency strategies into the WCAP strengthens long-term carbon outcomes by extending asset life, avoiding carbon-intensive repairs and rebuilds, and prioritizing durable, adaptable systems that perform under changing conditions. The inclusion of infrastructure design carbon in project discussions is yet another step toward achieving wider adoption of carbon reduction strategies on projects.

## Looking to the future

IMEG will continue to build upon this WCAP each year, evaluating our progress and identifying successes and setbacks. We will update the WCAP based on our annual evaluation and per MEP 2040 and SE 2050 requirements and add new information on sustainability and our growing technological expertise.

We hope this WCAP has piqued your interest in decarbonization and lowering carbon emissions, and inspired you as an IMEG employee-owner, engineer, and steward of the planet. We are all in this together and we look forward to working with you in doing our part to make a difference in this monumental sustainability movement.



# MULTI-DISCIPLINARY GOALS & TASKS

## 1 EDUCATE

### Goal: Develop task force support
√ **Task:** Create MEP Sustainability Task Force
√ **Task:** Create Infrastructure Sustainability Task Force
√ **Task:** Create Structural Sustainability Task Force

### Goal: Expand and strengthen the MCAP into a multi-disciplinary initiative
**Task:** Strengthen and broaden the MCAP

### Goal: Create education resources and tools
**Task:** Create required sustainability training
**Task:** Create several comprehensive courses
√ **Task:** The Ecometer
√ **Task:** IMEG chatbot

### Goal: Develop external education materials
√ **Task:** Inflation Reduction Act (IRA) Estimation Tool
√ **Task:** Net Zero Tool
√ **Task:** Embodied Carbon Webinar Series

### Goal: Participate in external working groups and communities
√ **Task:** Engagement with MEP 2024 Initiative
√ **Task:** Participate in the MEP Whole Life Carbon Pilot
√ **Task:** Join Carbon Leadership Forum Hubs

## 2 REPORT

### Goal: Incorporate carbon metrics into our enterprise-level data repository
**Task:** Create pilot version of a whole carbon dashboard

### Goal: Report carbon emissions annually
**Task:** Report carbon emissions in alignment with its commitments
**Task:** Automate the reporting process

## 3 REDUCE

### Goal: Reduce emissions through early project benchmarking
**Task:** Utilize existing IMEG carbon databases

### Goal: Reduce emissions through updated project specifications
**Task:** Update structural, MEP, and infrastructure specifications to include sustainable, energy-efficient options

### Goal: Investigate how MEP and structural disciplines can support each other for holistic reductions
**Task:** Prioritize actions with whole carbon synergies and greatest impact

## 4 ADVOCATE

### Goal: Advocate for whole building carbon emissions reductions with clients
**Task:** Develop standard language for client advocacy

### Goal: Leverage marketing opportunities
**Task:** Update marketing materials to better represent decarbonization and our multi-disciplinary approach

# GOALS & TASKS BY DISCIPLINE

## 1 EDUCATE

### STRUCTURAL INITIATIVES

**Task:** Utilize IMEG's Structural Embodied Carbon Database to record GWP emissions

√ **Task:** Innovate a Parametric Rhino Tool

√ **Task:** EcoFrame Tool

### MEP INITIATIVES

**Task:** Add carbon to equipment schedules for any equipment that utilitizes refrigerant

**Task:** Incorporate MEP 2040-related actions into workflows

√ **Task:** Refrigerant Tool

√ **Task:** MEP Embodied Carbon Calculator

√ **Task:** EUI Analysis Tool

### INFRASTRUCTURE INITIATIVES

**Task:** Explore low-carbon materiality options

**Task:** Create educational content that summarizes site design impact on the carbon footprint of a project

**Task:** Encourage designers to obtain relevant certifications (Envision, SITES, LEED, WELL)

√ **Task:** Generate resources for IMEG's library

√ **Task:** Create Stormwater Pond and Plant Selection Meg Agent

## 2 REPORT

### STRUCTURAL INITIATIVES

**Goal: Annual project submission to SE 2050 database**

**Task:** Submit 30 projects to the SE 2050 database

### MEP INITIATIVES

**Goal: Measure operational carbon**

**Task:** Create company-wide EUI and operational carbon benchmarks using modeled energy data

**Goal: Measure MEP embodied carbon**

**Task:** EPD Advocacy

√ **Task:** MEP Whole Life Carbon Pilot

**Goal: Calculate and reduce project carbon emissions due to refrigerants**

√ **Task:** Develop a fugitive refrigerant tracking tool and create a benchmark

**Goal: Report carbon emissions annually**

**Task:** Stay current on the ECHO project

### INFRASTRUCTURE INITIATIVES

**Goal: Bring embodied carbon to the forefront**

**Task:** Create site carbon tracking framework



# GOALS & TASKS BY DISCIPLINE

## 3 REDUCE

### STRUCTURAL INITIATIVES

**Goal: 5% reduction in structural embodied carbon by 2027**

**Task:** Establish benchmarks for project types and material types by the end 2026

**Task:** Quantify 5% reduction via Revit, Excel, Power BI

**Goal: 30% reduction in structural embodied carbon by the year 2030**

**Task:** Identify and share strategies to implement increasing reductions

**Task:** Create method to ensure scalable reductions for the next five years and beyond

**Task:** Establish a process for calculating structural embodied carbon reductions against the IMEG project benchmarks

**Goal: Update sustainability language**

**Task:** Monitor updates and include guidance

**Task:** Finalize and implement maximum concrete GWP table for the general notes and specifications

√ **Task:** Specifications for concrete and steel

**Goal: Create material & project phase design guides**

**Task:** Develop material-specific embodied carbon reduction design guide

**Task:** Develop design phase embodied carbon reduction design guide

### MEP INITIATIVES

**Goal: Reduce project carbon emissions through incorporating life-cycle-based decision-making into the design process**

**Task:** Research low-GWP refrigerant equipment

**Task:** Advocate for proper refrigerant management on projects, per EPA's SNAP requirements

**Task:** Continue incorporating energy conservation measures into project workflow for all projects

**Task:** Research/incorporate MEP embodied carbon reduction strategies into project workflow

√ **Task:** Participate in the MEP 2040 Whole Life Carbon Pilot

### INFRASTRUCTURE INITIATIVES

**Goal: Create standard references that provide designers with low-carbon products**

**Task:** Explore low-carbon materials, particularly for concrete paving, asphalt, and landscaping

**Task:** Detail the initial specifications

**Goal: Incorporate landscape design to maximize project carbon sequestration**

**Task:** Establish a protocol for quantifying carbon sequestration potential as standard practice on our projects

**Goal: Set a baseline or standard for site design carbon**

**Task:** Quantify the carbon savings from the implementation of low-carbon materials and design strategies

# GOALS & TASKS BY DISCIPLINE

ADVOCATE 4

## ADVOCATE

### STRUCTURAL INITIATIVES

**Goal: Continue to converse with our clients about opportunities to reduce embodied carbon in their projects**

**Task:** Formulate method for tracking touchpoints and sharing findings

**Goal: Publicly declare IMEG as a member of the SE 2050 Commitment**

√ **Task:** A podcast and blog are posted on the IMEG website and shared on LinkedIn; more outreach planned

**Goal: Create a structural sustainability brochure to send to clients to share IMEG's structural sustainability approach**

√ **Task:** Two one-page documents were created as a part of the MCAP and the SSI

### MEP INITIATIVES

**Goal: Identify manufacturers and equipment with EPDs**

**Task:** Send EPD advocacy letter to manufacturers

**Task:** Develop an advocacy tracking system

**Task:** Incorporate EPD specification language in IMEG specification standards

**Goal: Advocate for industry-wide development of equipment that uses low-GWP refrigerants**

**Task:** Develop an IMEG refrigerant advocacy letter and send it to common manufacturers

### INFRASTRUCTURE INITIATIVES

**Goal: Advocate with clients on low-carbon options and focus on carbon sequestration**

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2026 IMEG WHOLE CARBON ACTION PLAN