
350
WISCONSIN

Let’s take a moment to take 2 deep breaths together and reflect on our ties to this land we live on.

Ajijaak - Sandhill crane in Ojibwe

Agenda for our Monthly Meeting

7:00	Land acknowledgement and welcome
7:05	Small group "get to know each other" breakout rooms
7:15	Sustainable Buildings: Identifying Leverage Points for Climate Action **Keith Fuller/Susan Millar,** Community Climate Solutions Team will introduce **Ben Austin,** Sustainability Lead, Findorff Construction
7:45	Teams' Action Updates
8:05	Optional breakout rooms: 1. Chatting with our speakers **Main room: Newcomer welcome**

Greeting each other in zoom breakouts

Share your name, where you're from, and how you're involved with 350 Wisconsin

And then share your response to the following question:

How do you stay motivated in the face of the challenge of climate change?

SUSTAINABLE BUILDINGS

Identifying Leverage Points for Climate Action

December 4, 2023

Findorff
BUILDING & BEYOND

AGENDA

- About Findorff
- Commercial Construction Process
- Defining Sustainability
- The Role of Buildings in Emissions Reductions
- Case Studies
- Looking Ahead

ABOUT US

Findorff is one of the Midwest's leading builders, and is proud of the successful long-standing relationships with our clients in Wisconsin.

PROUD OF OUR CLIENT RETENTION

84% REPEAT CLIENTS

SELF-PERFORM WORK

- *Concrete*
- *Masonry*
- *Carpentry*
- *Steel Erection*
- *Metal Stud and Drywall*

ANNUAL REVENUE

$960M

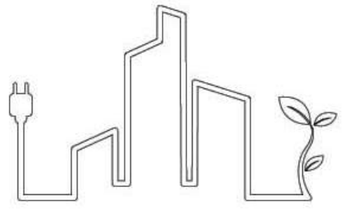
OVER 1000 CONSTRUCTION PROFESSIONALS

- in Wisconsin -

130+ YEARS

of BUILDING EXPERIENCE

WISCONSIN'S TOP GREEN CONTRACTOR THE PAST THREE YEARS



(Engineering News-Record Magazine)

$1.7 BILLION

IN LEED CERTIFIED BUILDINGS

VOTED "MOST TRUSTED BUILDER" BY PEERS

(In Business)

$2.5 MILLION

IN FOCUS ON ENERGY INCENTIVES

SCIENCE & TECHNOLOGY

HEALTHCARE

K-12 EDUCATION

ARTS

HIGHER EDUCATION

CORPORATE

RELIGIOUS

GOVERNMENT / MUNICIPAL

ABOUT FINDORFF

COMMERCIAL CONSTRUCTION PROCESS

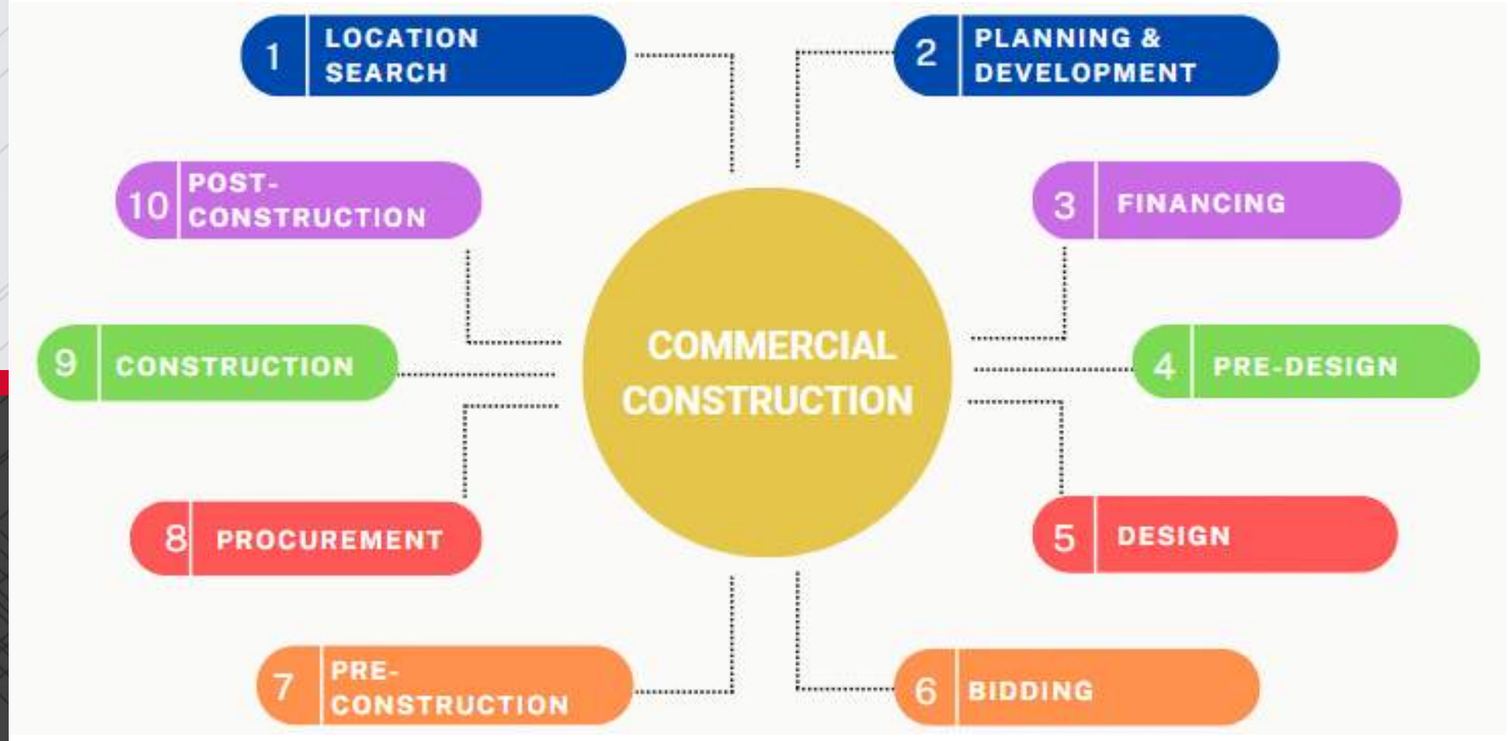


Image Credit: Constructive Solutions Inc.

Image Credit: REX Construction Services

DEFINING SUSTAINBILITY

DEFINING SUSTAINABILITY

Energy Efficiency
- » Building Siting and Orientation
- » Building Envelope
- » Heating/Cooling Systems & Controls
- » LED Lighting & Controls
- » On-Demand Water Heating

Renewable Energy
- » On-site Rooftop Solar Panels
- » “Solar-Ready” Rooftops
- » Off-site Renewable Energy

Water Efficiency & Reuse
- » Low Flow Plumbing Fixtures
- » Greywater Systems
- » Rainwater Harvesting
- » Irrigation

Waste Management
- » Construction Waste Reduction
- » Material Salvage & Reuse
- » Construction Recycling
- » Operational Waste Planning

Site and Land Stewardship
- » Sensitive Land Protection
- » Low Impact Landscaping
- » Composting and Gardening
- » Access to Nature
- » Stormwater Management
- » Green Roofs
- » Protect and Restore Habitat

Transportation
- » Electric Vehicle Charging
- » Bicycle Infrastructure
- » Carpooling/Ridesharing
- » Access to Public Transport

Material Selection
- » Low Embodied Carbon
- » Healthy Materials
- » Material Transparency
- » Local Materials
- » Recycled Content
- » Social Justice Transparency

Occupant Health & Wellbeing
- » Outdoor and Indoor Air Quality
- » Water Access and Quality
- » Thermal Comfort
- » Active Design
- » Access to Healthy Foods
- » Natural Light
- » Programmed Wellness Spaces

Building as a Teaching Tool
- » Programming
- » Graphics
- » Interactive Data
- » Building Elements on Display

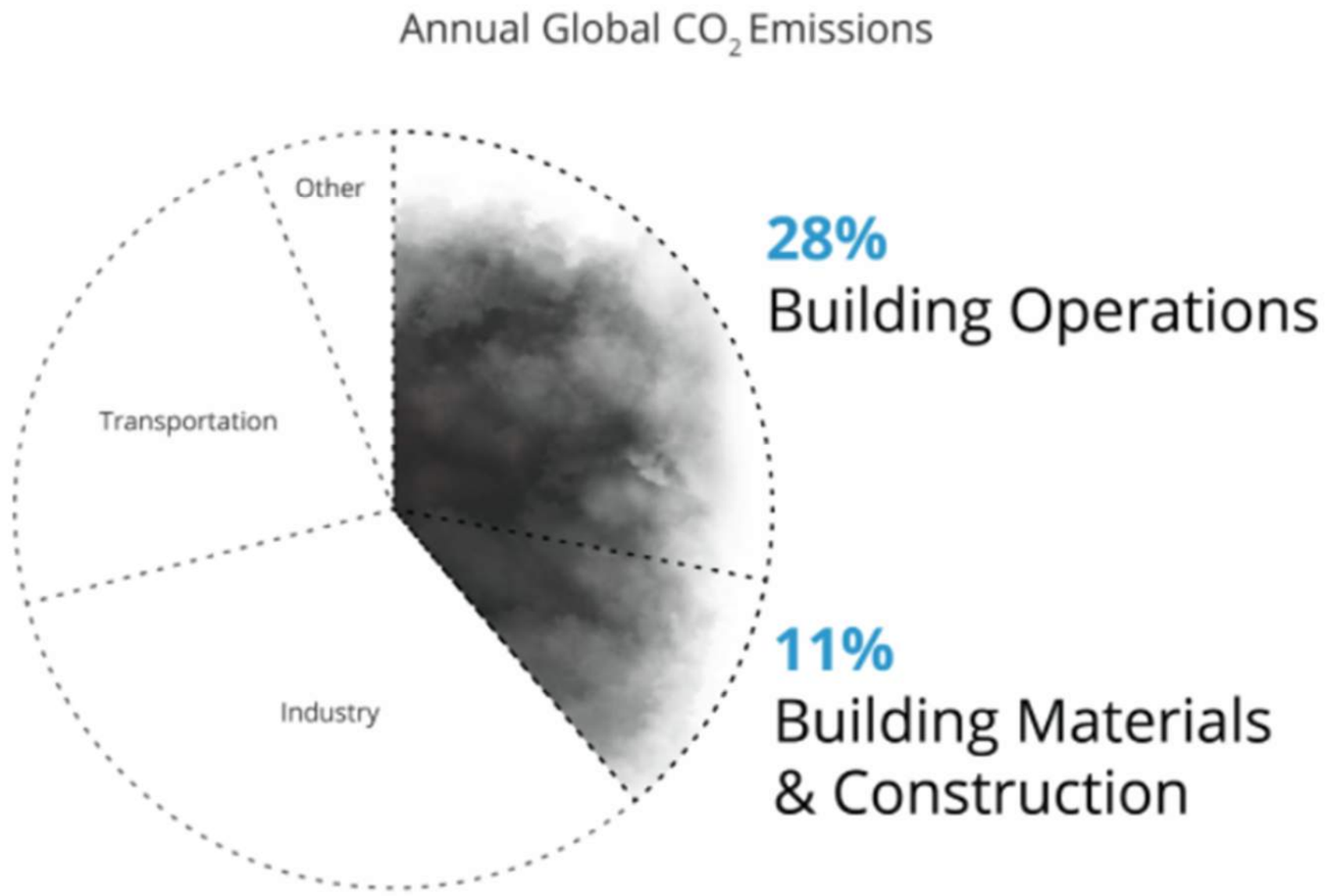
Community
- » Universal Design
- » Shared Spaces
- » Workforce
- » Youth Apprenticeship

.....AND MORE!!

DEFINING SUSTAINABILITY

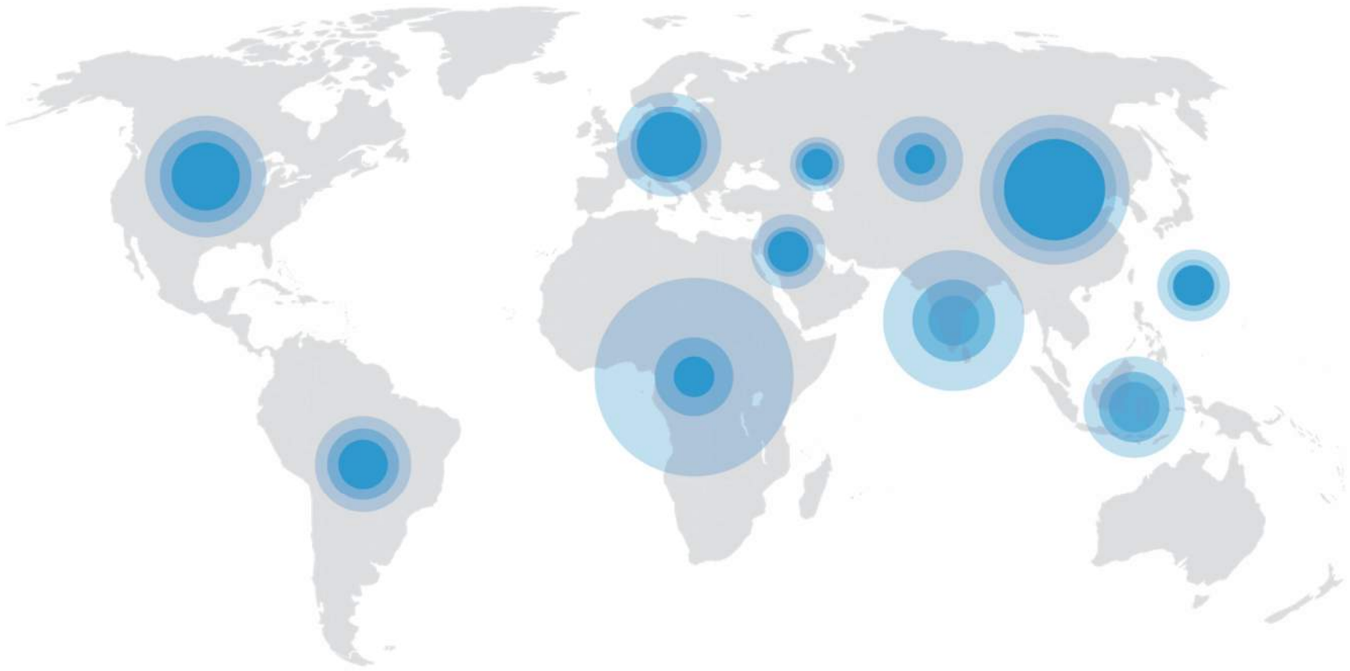
THE ROLE OF BUILDINGS IN EMISSIONS REDUCTIONS

Buildings generate nearly 40% of annual CO2 emissions.



WHY FOCUS ON THIS?

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



Data Sources: Global ABC, Global Status Report 2017

Global building floor area is expected to double by 2060.

To accommodate the largest wave of urban growth in human history, we expect to add 2.4 trillion ft^2 (230 billion m^2) of new floor area to the global building stock, **the equivalent of adding an entire New York City to the world, every month, for 40 years.**

Achieving zero emissions from new construction will require energy efficient buildings that use no on-site fossil fuels and are 100% powered by on- and/or off-site renewable energy.

Actions for New Buildings

NEW CONSTRUCTION

In 2040, **2/3 of the global building stock** will be buildings that exist today.
Without upgrades, they will still be emitting GHGs.

Data Source: IEA Energy Technology Perspectives 2020, February 2021 Revised Edition

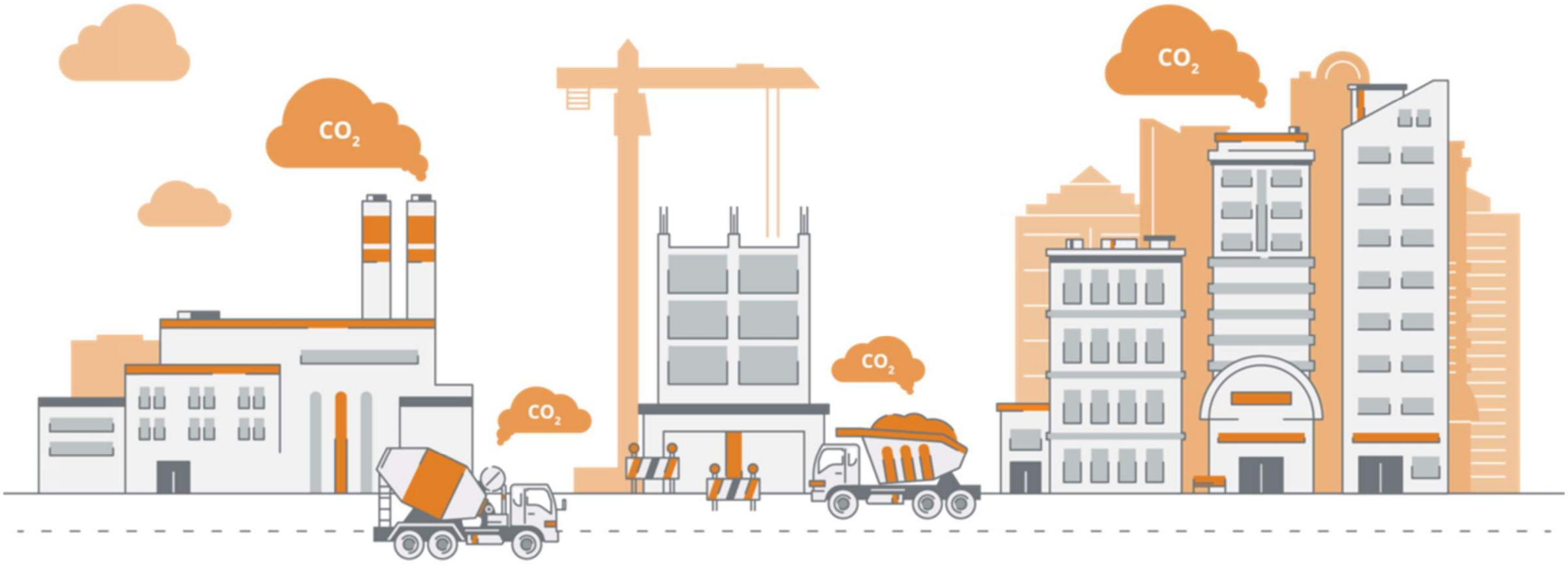
Approximately 2/3 of the global building area that exists today will still exist in 2040.

Without widespread existing building decarbonization across the globe, these buildings will still be emitting CO2 emissions in 2040 and we will not achieve the Paris Agreement's 1.5°C target.

Achieving zero emissions from the existing building stock will require leveraging building intervention points to accelerate the rate of energy upgrades (increasing energy efficiency, eliminating on-site fossil fuels, and generating and/or procuring 100% renewable energy).

Actions for Existing Building

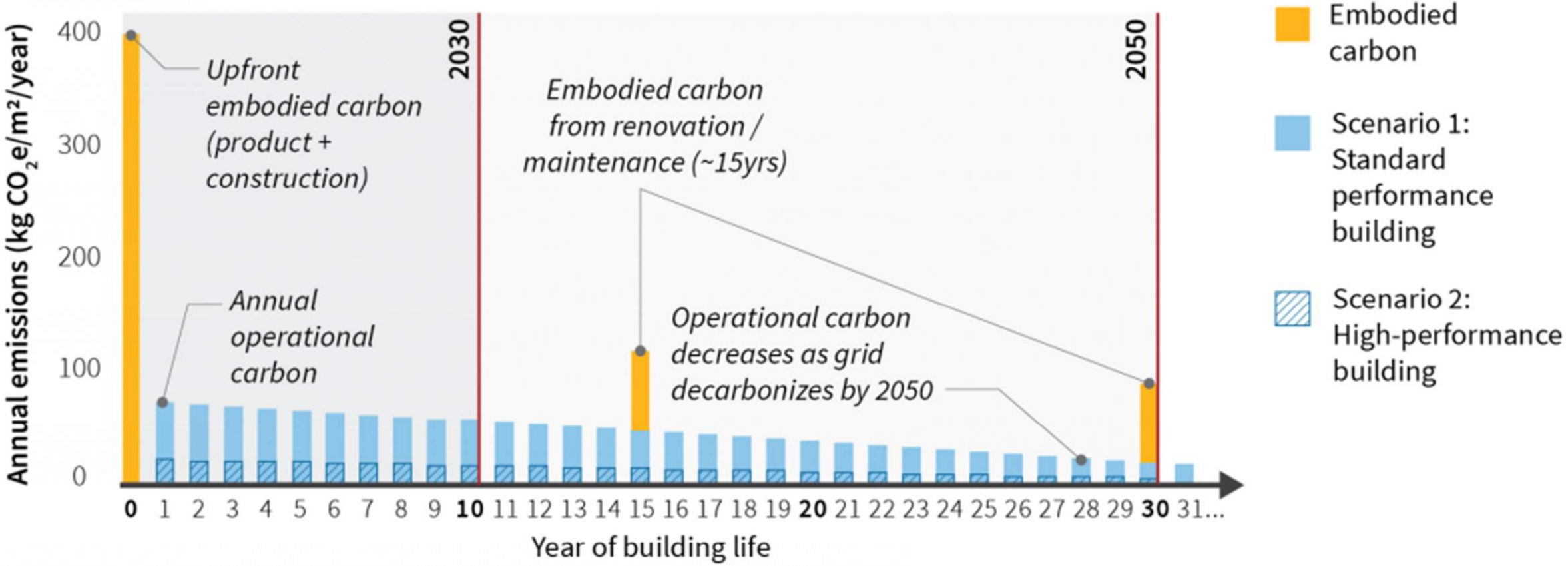
EXISTING BUILDINGS



Embodied Carbon
The emissions from manufacturing, transportation, and installation of building materials.

Operational Carbon
The emissions from a building's energy consumption.

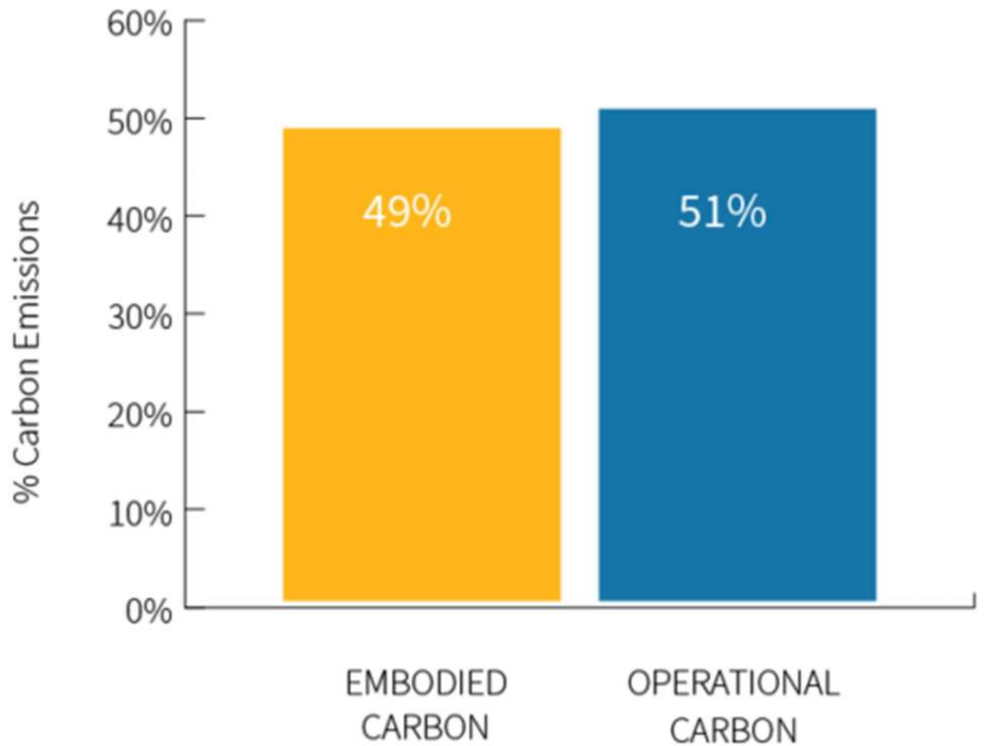
TYPES OF EMISSIONS IN BUILDINGS



TYPES OF CARBON IN BUILDINGS

Total Carbon Emissions of Global New Construction from 2020-2050

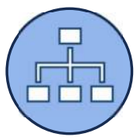
Business as Usual Projection



 Data Sources:
UN Environment Global Status Report 2017; EIA International Energy Outlook 2017

TYPES OF CARBON IN BUILDINGS

CALL TO ACTION FOR REDUCING OPERATIONAL CARBON



1 Benchmark

New Buildings: Understand baseline energy use compared to similar building types

Existing Buildings: Understand current energy use compared to similar building types

2 Set Goals

New + Existing Buildings: Engage stakeholders and design team early to outline goals for the project; identify life-cycle opportunities for future upgrades and investments

3 Evaluate

New Buildings: Evaluate building program, geometry, orientation, thermal envelope; Perform LCA analysis on systems and equipment

Existing Buildings: Perform energy audit; Improve thermal envelope – new insulation, air sealing, upgrade windows, weatherization; Upgrade lighting to LEDs

4 Optimize

New Buildings: Design team to study load reduction strategies and energy conservation measures (ECMs)

Existing Buildings: Perform retro-commissioning to optimize existing equipment; Upgrade existing systems and controls

5 Electrify

New Buildings: Electrify systems or plan for future electrification; install renewable systems

Existing Buildings: Upgrade and electrify systems – replace fossil-fuel burning equipment in favor of electric-based systems; install renewable systems

6 Educate

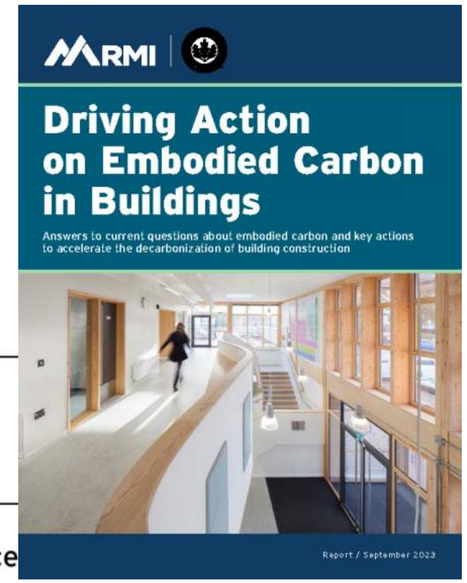
New + Existing Buildings: Educate and train staff and/or tenants to optimize operations

7 Measure

New + Existing Buildings: Verify and Track ongoing building performance, perform regular maintenance and commissioning to ensure system is optimized and operating efficiently

Content Source: Eppstein Uhen Architects
Graphic Source: RMI

CALL TO ACTION FOR REDUCING EMBODIED CARBON



1	**Reuse**	Reuse an entire building and/or components of a deconstructed building. Limit the scope of renovations to what is needed. Prioritize salvaged materials over new production.
2	**Right-size**	Optimize building size by using space more intensively and minimizing excess space. Design with better scheduling or dual-use spaces to decrease the building size.
3	**Dematerialize**	Expose structure instead of applying finishes. Optimize structural system to minimize exce material. Consider reducing overdesign by evaluating conservative load assumptions.
4	**Carbon storing materials**	Carbon storing materials can speed transition to zero embodied emissions. Building projects can ask for responsibly produced biobased and concrete materials that can store carbon durably.
5	**Product substitutions**	Make substitutions for the highest impact materials informed by a whole-building integrated approach or by low-material GWP limits when you cannot do an LCA.
6	**Sourcing**	Ensure products are coming from legal and sustainable or regenerative sources. Prioritize local materials when data reveals they have reduced impacts associated with transport.
7	**Circular design**	Reduce the impact over the building's life cycle and enable low-embodied-carbon future construction by prioritizing reusability, recyclability, design for disassembly, and durability.

Exhibit 1 | RMI Graphic. Source: RMI analysis

A combination of interventions can result in deeper reductions than pursuing just one

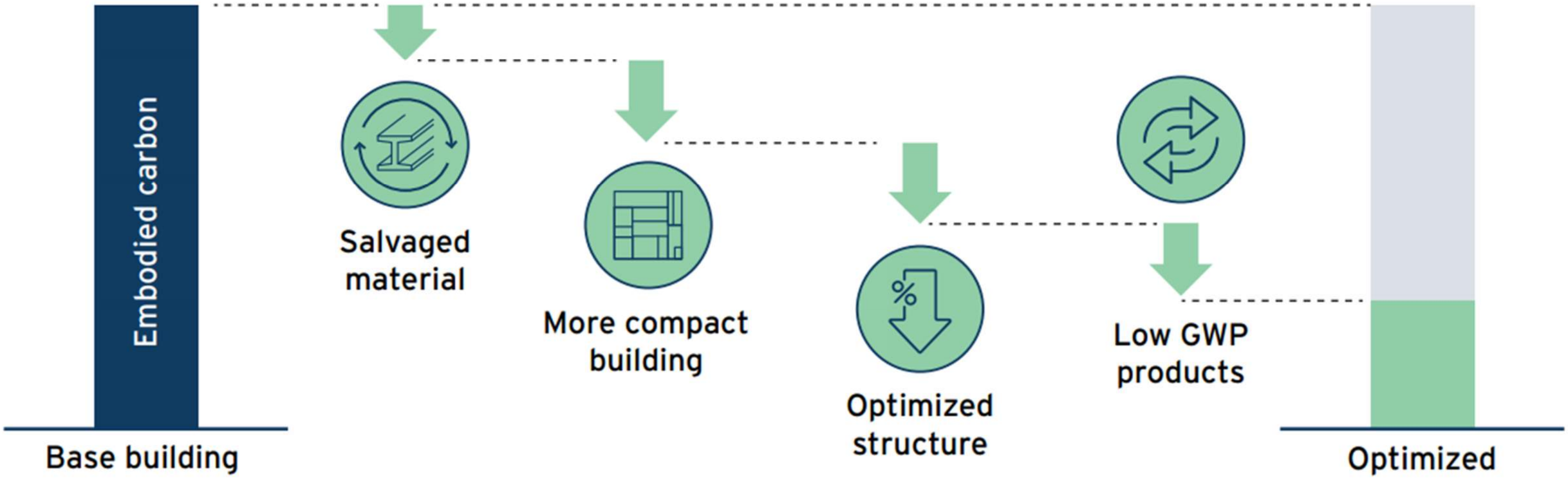


Exhibit 3 | RMI Graphic. Source: RMI analysis

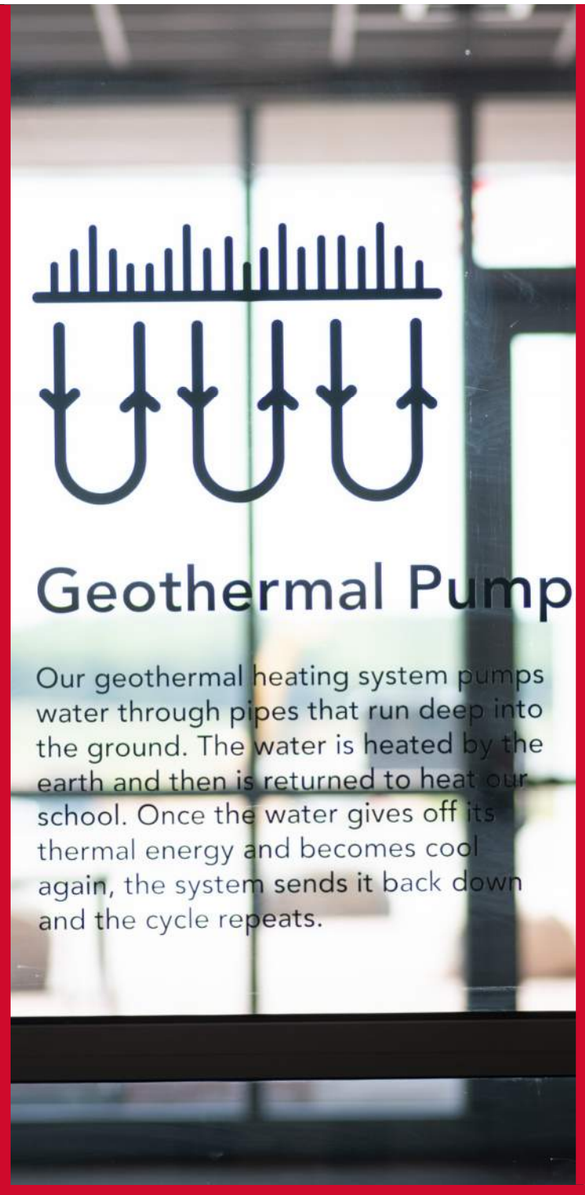
OPERATIONAL CARBON CASE STUDY

VERIFIED NET ZERO CASE STUDY

VERIFIED NET ZERO CASE STUDY

VERIFIED NET ZERO CASE STUDY

VERIFIED NET ZERO CASE STUDY



THE BUILDING AS A TEACHING TOOL

FINANCIAL TOOLS CASE STUDY

SOLAR + GEOTHERMAL CASE STUDY – CENTRO HISPANO

ku0

LEVERAGING ALL AVAILABLE FINANCIAL TOOLS

SOLAR FOR GOOD

$10,000 *Cash Grant*

MADISUN SOLAR ENERGY PROGRAM

$10,000 *Cash Grant*

focus on energy®
Partnering with Wisconsin utilities

$12,500 *Energy Efficiency Incentive*

$9,000 *Solar Incentive*

The **Inflation Reduction** *Act*

$54,000 *IRA 30% Solar Base Tax Credit*

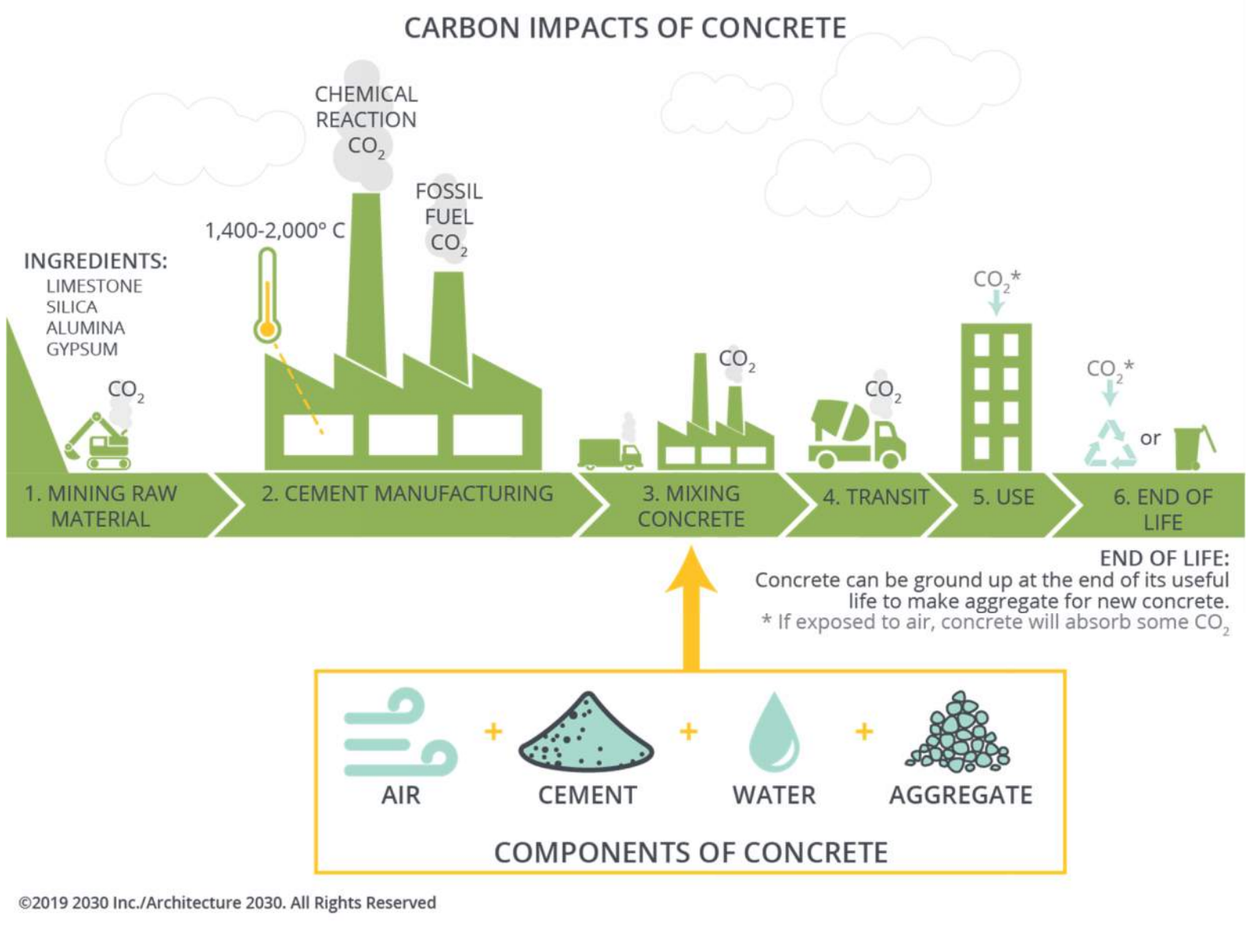
$18,000 *IRA 10% Solar Bonus Tax Credit – Low Income*

$420,000 *IRA 30% Geothermal Base Tax Credit*

Initial System Costs:	$1,580,000
Total Targeted Offset:	$533,500 (33.7%)
Final System Costs:	**$1,046,500**

EMBODIED CARBON CASE STUDY

IDENTIFYING EMBODIED CARBON IMPACTS



Environmental Product Declaration Ready-Mix Concrete

(per ISO 14025 and ISO 21930)

Focus on Sustainability

A look at our commitment to reducing the embodied carbon footprint of our buildings

At oLiv Madison we have a projected **38.3%** reduction in embodied carbon emissions of our concrete structure.

The project has avoided the equivalent of **3,206 Metric Tons** of CO2 emissions.

Curious what those numbers compare to? Check out these stats!

SAVINGS = TO

- **3,794** acres of forest — *the annual CO2 sequestration from*
- **7,958,308** miles — *driving a standard car*
- **360,768** gallons of gasoline — *the combustion of*

CO2 EMISSIONS = TO

- **624** homes' electricity use for one year
- **389,986,324** smartphones charged
- **404** homes' energy use for one year

MARKET LEADERSHIP CASE STUDY


Carbon
Leadership
Forum
Wisconsin
CLF Wisconsin Hub - Carbon Leadership Forum
Bringing together professionals working to address embodied carbon in the built environment in Wisconsin.
Non-profit Organizations · 151 followers · 2-10 employees
Sara & 64 other connections follow this page
Message
✓ Following
More
Home
About
Posts
Jobs
People


YOUR CLF Hub in Wisconsin
Carbon
Leadership
Forum
Wisconsin
CLF Wisconsin Hub - Carbon Leadership Forum
Edit Page
Share Page
Hub Co-Leads: Ben Austin, Kim Reddin, & Julia Pooler
This is your hub - everyone can help shape the direction!
Be sure to follow CLF WI Hub on **LinkedIn** for updates and program offerings by CLF WI Hub and nearby hubs Chicago, Twin Cities, etc.
Building additional capacity through resources on our NEW WEBSITE! www.clfwi.org
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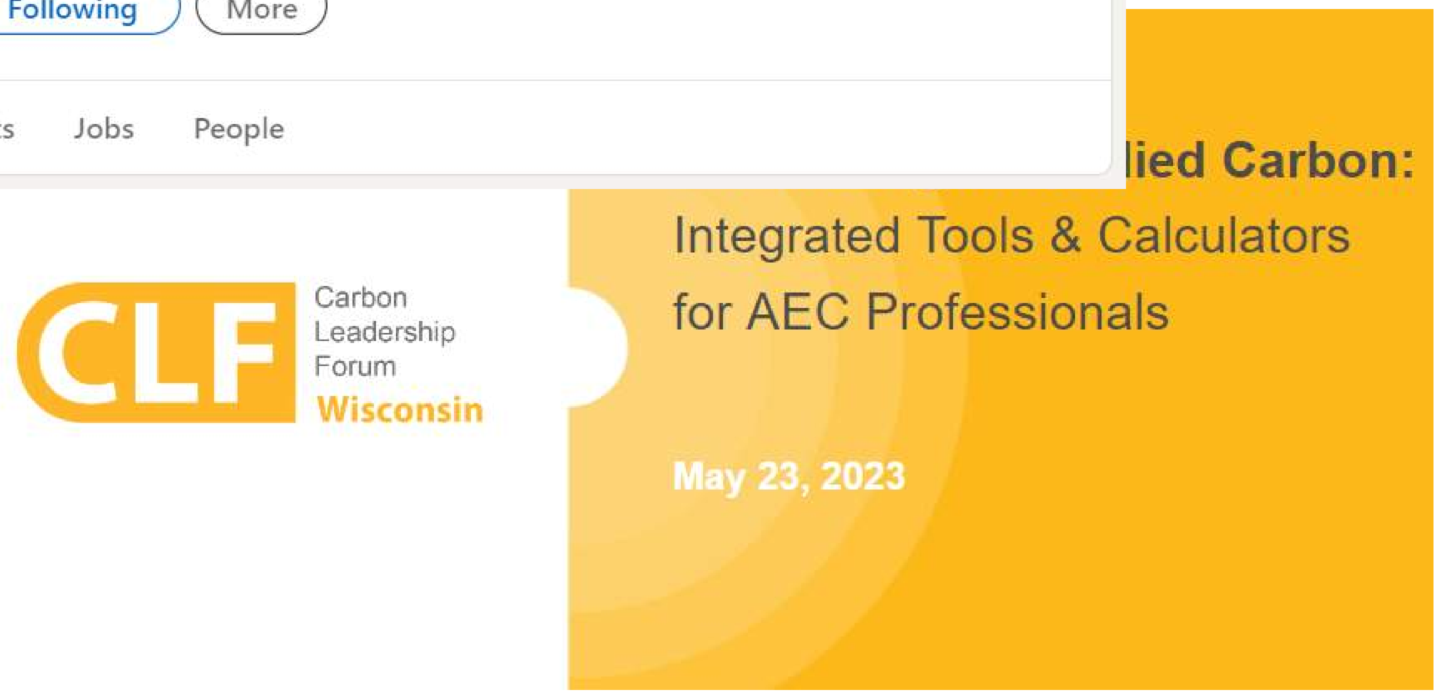


Structural System Comparison Example
Sum of Global Warming Potential
Total (kgCO2eq)
Link
Revit Plugin
18:44 / 57:01
CLF WI Hub Presents: Embodied Carbon Case Studies Here in Wisconsin
Carbon Leadership Forum Wisconsin Hub
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CARBON LEADERSHIP FORUM

LOOKING AHEAD

DEVELOPING TRENDS **IN BUILDING SUSTAINABILITY**

- **VOLUNTARY ADOPTION OF BROAD SUSTAINABILITY FRAMEWORKS**
  - **ESG** (Environment, Social & Governance) & **CSR** (Corporate Social Responsibility)
  - When our clients adopt these frameworks, requirements trickle down to our projects
- **A LASER FOCUS ON CARBON REDUCTIONS**
  - Organizations are setting Carbon Reduction Targets and reporting annually on progress against these goals (e.g. Carbon Reductions of 50% by 2030)
- **The Carrot: FINANCIAL SUPPORT FOR SUSTAINABILITY**
  - The Inflation Reduction Act (IRA)
- **The Stick: REGULATION & REQUIREMENTS**
  - Energy Benchmarking, Climate Disclosures, Natural Gas Bans
  - Expect more of this related to energy and carbon emissions at multiple levels

THANK YOU!

Action Updates

Caroling for the Climate

- Saturday December 16
- Hilldale Mall
- Meet at 11:30, Metcalfs
- Familiar tunes with alternate lyrics
- Art Collective/Divest & Defund
- Sign up here: https://docs.google.com/forms/d/e/1FAIpQLSd0ECv_NtnUEWhqOwaQKV2O6au4ERwat_3QUpYyepsfZJqnug/viewform?usp=sf_link
- Questions? Contact divest.defund@350wisconsin.org

Michigan Public Service Commission approves Enbridge Line 5 permit for tunnel under Straits of Mackinac

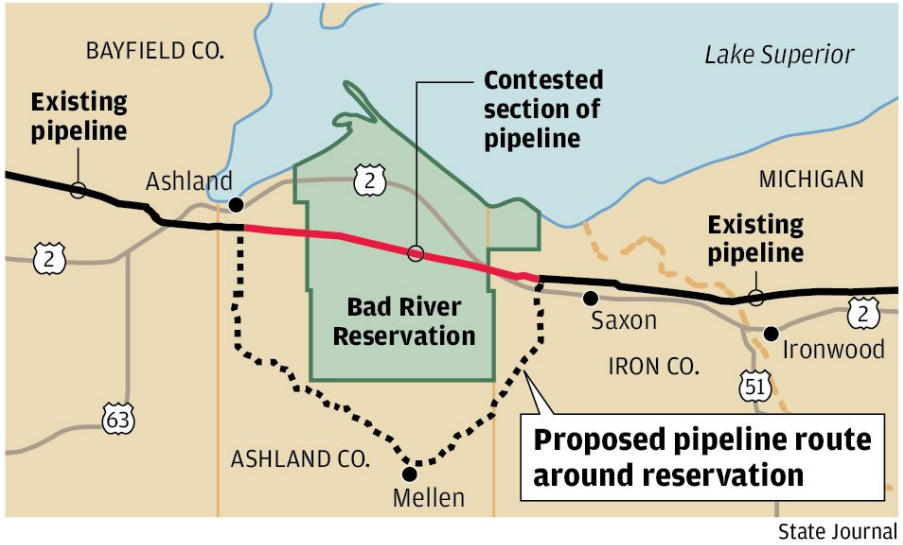
A Michigan agency approved a permit for Enbridge Line 5 replacement tunnel in Great Lake. The decision is drawing outrage from tribes, environmental groups.

MPSC approved the permit with the following conditions:

- Enbridge must receive all governmental approvals.
- No 3rd party utilities can be run through the tunnel.
- Enbridge must provide a risk management plan.
- More robust testing and construction practices must be conducted.

Tell the Army Corps: Don't take any shortcuts on the proposed Line 5 pipeline reroute in Wisconsin!

Sign the petition telling the Army Corps of Engineers to conduct a FULL EIS on Line 5!



Giving Tuesday Campaign a Big Success!

- ***Goal***: surpassed $25,000 goal – nearly halfway to total year-end goal, to ensure more climate wins in 2024!
- ***Attendees***: 116
- ***Video Debut:*** on YouTube page
  - “Protect All the Waters”
  - 2023 Year-in-Review
- ***Corporate sponsorships***: Five!
- ***Silent auction items***: 140 items!
  - 17 still available for bidding in “Last Chance” silent auction!

Last Last Chance Auction!

Closes WEDNESDAY at 9 pm

www.tinyurl.com/GT-Auction

412

Tapped Maple Syrup Tour For Up to 10 People (Value $250)

$160

Bid / Info

Experiences and Skillshares

421

One-on-one Creative Writing Mentoring Session

$100

Bid / Info

Experiences and Skillshares

216

One-year Membership to Green Box Compost Plus Five Bags of Compost (Value $370)

$199

Bid / Info

Gift Cards

301

Beautiful Sterling Necklace with gemstones and vintage crysta...

$50

Bid / Info

Art & Handmade Items

302

'The Last Pink Poppy' Giclee Print

$55

Bid / Info

Art & Handmade Items

501

B-Cycle Madison 2 Annual Passes (Value $317)

$150

Bid / Info

Sports and Outdoor Activities

503

Madison Mallards Baseball Package (Four grandstand tickets and four hats--Value $92)

$45

Bid / Info

Sports and Outdoor Activities

508

Milwaukee Brewers Gift Box (Value $122)

$50

Bid / Info

Sports and Outdoor Activities

511

Harbor Athletic Club Wellness Studios Individual/Family 1-Month Membership (Value $170)

$50

Bid / Info

Sports and Outdoor Activities

622

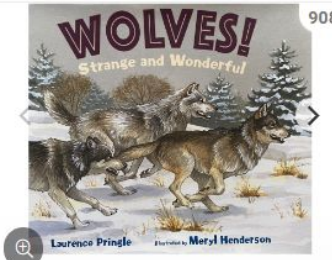
Sunflower Water Color Painting by Shirley's Art Venture

$12

Bid / Info

Gifts and Personal Care

908



Six New Environmental Books for Middle Schoolers

$55

Bid / Info

Books

605

Petphoria Dog Lover's Goodie Bag (Value $250)

$125

Bid / Info

Gifts and Personal Care

611

Truck Shimmerer

$10

Bid / Info

Gifts and Personal Care

62

Nature Art Spinner from Shirley's Art Venture

$15

Bid / Info

Gifts and Personal Car

307

Snootle

$38

Bid / Info

Art & Handmade Items

313

John Singer Sargent Poster, Framed

$10

Bid / Info

Art & Handmade Items

317

Eiffel Tower Under Construction, Framed Photo

$25

Bid / Info

Art & Handmade Items

NEW! Staff Office Hours

We're holding monthly(ish) staff office hours (hat tip to the Sierra Club for this cool idea)! This is a great time to drop in (*no appointment needed!*) to talk through an idea, give some feedback, ask a question, or just say hi. Staff at the office hours will rotate each month.

Normally we'll be doing this the fourth Tuesday of the month, 3-5 PM… but because of the holidays, we'll be doing a combined Nov/Dec session!

Tuesday December 5, 3-5 PM, Zoom

For a Zoom link, please check the public 350 Wisconsin calendar (https://350wisconsin.org/meeting-event-calendar/ or go to our website, click "Events", then "Meeting/Event Calendar")

Next monthly meeting

- January 8 (a week late), Witnessing Global Climate Action at COP 28, first-hand account from Heather Phelps
  - Sign up for a daily newsletter from the Christian Climate Observer Program at https://www.ccopclimate.org/

On Zoom only

Upcoming team meetings

Tar Sands: 1st Mondays 5:30–6:30 pm
Contact: britnie.remer@350wisconsin.org

Climate Justice: 2nd Mondays 7:00–8:30 pm
Contact: Marian.Fredal@350madison.org

Communication Action (CAT): 3rd Mondays 7:00-8:30 pm
Contact Emily.Park@350wisconsin.org

Divest & Defund: 4th Mondays 7-8:30 pm
Contact divest.defund@350wisconsin.org

Upcoming team meetings

Community Climate Solutions: 3rd Thursdays 5-6 pm
Contact: Susan.Millar@350wisconsin.org

Art Collective:
Contact: Russ Bennett bennett.russ@gmail.com
Dianne Brakarsh movingfromwithin@gmail.com

State Policy: Contact Janet Niewold janet.neiwold@gmail.com

Fundraising: 3rd Wednesdays 7-8pm
Contact kristen.clark@350wisconsin.org

Monthly Meeting: Friday January 5, 1-2 pm: Contact: Julia.Isaacs@350wisconsin.org

Time for breakouts!

Stay here if you're a newcomer

Room 1 Q&A with speakers

If you are unable to find the button or choose a room, put a message in the chat indicating which room you would like to join.