



Healthy Materials and Clean Construction: Updating Gilead's Sustainable Construction Verification Process

Nicole Kho + Kathleen Hetrick



Learning Objectives:

Understand impact for construction health and carbon

Improve sustainable construction outcomes and tracking

Develop processes for updating carbon requirements throughout design through construction

Identify ways to further reduce carbon and public health impacts on project



Speakers



Nicole Kho

She / Her / Hers

Sr. Director, Corporate Sustainability



Kathleen Hetrick

She / Her / Hers

Buro Happold US Sustainability Integration Lead



Mike Swenson

He / Him / His

*Suffolk Director,
Sustainability & Commissioning*

Who
We
Are



Creating a healthier world for all people

In the ancient world, there was a tree that was known for its healing powers. Like the medicinal resin it produced, the tree was called the Balm of Gilead.

We exist for the same purpose: to bring new hope in the face of devastating diseases. For more than 35 years, we have set - and achieved - bold ambitions once thought impossible in medicine, with the goal of creating a healthier world for all people.



Growing Our Business for Greater Impact

We are evolving our strategic focus to expand our reach. By investing in world-class science, driving access to our medicines, addressing societal barriers to care and building a culture where our employees can make a real impact together, we will continue to create a healthier world for all people.



PIPELINE

Bring 10+ transformative therapies to patients by 2030



PREFERRED PARTNER

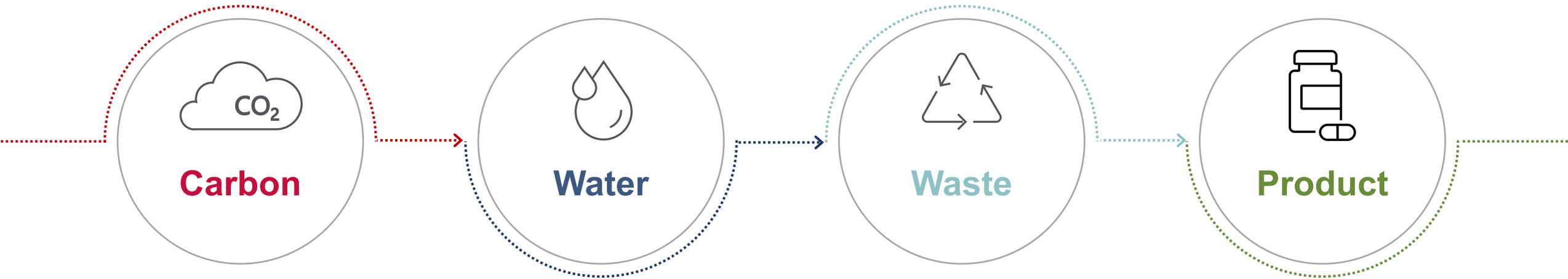
Be the biotech employer and partner of choice



SUSTAINABLE VALUE

Deliver shareholder value in a sustainable, responsible manner

Gilead's Sustainability Goals for a Healthier World



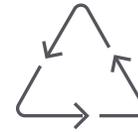
Carbon

- Reduce Scope 1 and 2 greenhouse gas emissions by 46% by 2030¹
- Reduce Scope 3 greenhouse gas emissions by 15% by 2030¹
- Transition 100% of fleet vehicles to electric or low emissions vehicles, and increase charging infrastructure by 2030 (EV100)
- 100% renewable electricity in operations by 2025 (RE100)
- Achieve Carbon NetZero Operations GHG emissions by 2030



Water

- Achieve water neutrality in water stressed regions by 2030
- Reduce potable water use at owned facilities by 30% by 2030¹



Waste

- Reduce total waste generated by 20% by 2030¹ (non-hazardous only, excludes construction and demolition waste)
- Achieve Zero Waste to Landfill status at owned facilities by 2030, Foster City to achieve by 2025 (may exclude leased facilities)
- Eliminate single use plastics by 2025 (excludes Manufacturing and R&D operations)



Product

- 100% product packaging widely recyclable or reusable, including elimination of all unnecessary plastics, by 2025²
- Use 30% post-consumer recycled content in all plastic packaging by 2025²
- Use 70% recycled content paper from sustainably managed forests by 2025²

Notes

1. Compared to 2019 baseline
2. Where quality and safety permit and excludes primary packaging

Sustaining our Shared Planet

Together, we act responsibly for our shared future



Reduction of carbon emissions compared to 2019¹



Green building certifications since 2016



Metric tons of waste reduced compared to 2019



Megaliters of water conserved per year³



Widely recyclable product packaging⁴



Scientists certified through My Green Lab

Creating a **healthier world** for all people means we deliver our medicines in a way that does **not come at the expense of our planet**. With a legacy of bold discoveries and scientific advancement on the horizon, we have transformed our environmental footprint through programs that embed sustainability into our business, our supply chain, and our communities.

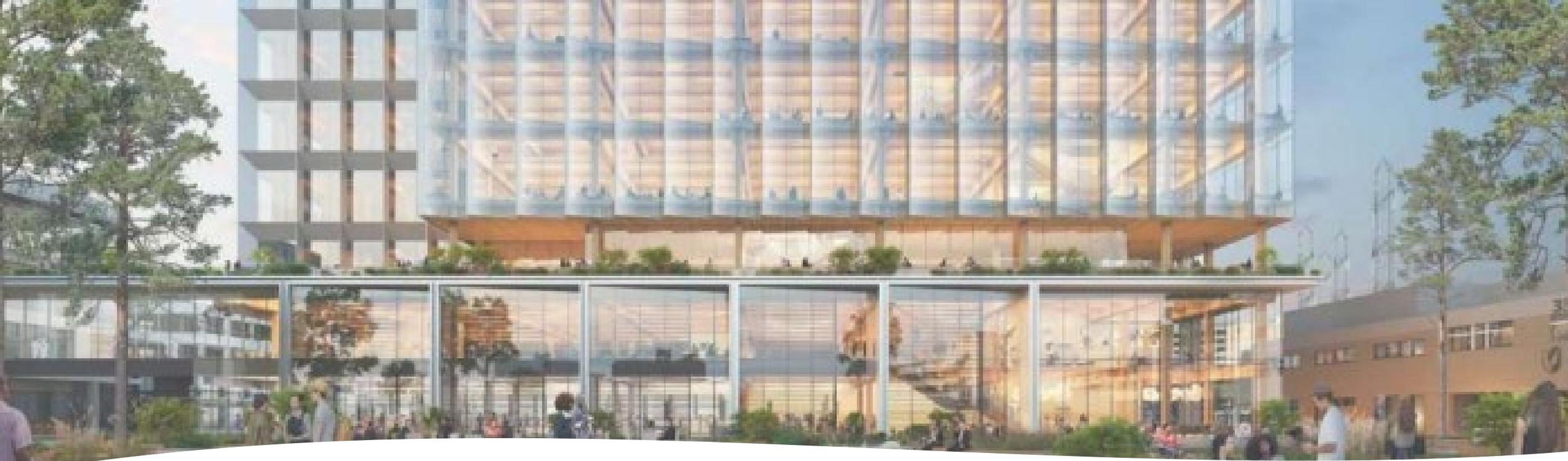
¹ This reduction in operational emissions supports our approved Science Based Targets Initiative (SBTI) target.

² Includes leased and owned sites.

³ Water savings achieved by projects implemented 2022-2024.

⁴ Excludes primary packaging, and where quality and safety permit. Represents 98% of packaging volume.





So you want to build a state-of-the- art research lab AND....

- Inspire and enrich your talented team with a beautiful building
- Meet your Sustainability targets
- Achieve Net Zero commitments
- Deliver
 - *On time*
 - *On budget*
 - *Life-saving research*



Project Sustainability Standards

Corporate Std.



ILFI ZC v1.0



LEED Gold



	Corporate Std.	ILFI ZC v1.0	LEED Gold
Deconstruction & Construction Waste	<ul style="list-style-type: none"> Divert at least 85% of C&D materials from landfill, exclusive of ADC 	<ul style="list-style-type: none"> NA 	<ul style="list-style-type: none"> Divert 75% of C&D materials Recycled Content tracking
Embodied Carbon	<ul style="list-style-type: none"> 15% reduction embodied carbon A1-A3 Track and Submit 30 EPDs against embodied carbon target 10-60% post-consumer and pre-consumer recycled content targets for highest impact materials 	<ul style="list-style-type: none"> A1-A5 embodied carbon <500kgco2e/m2 >10% A1-A5 embodied carbon reduction Tracking A1-A5 through CA 100% disclosure and offset of residual carbon emissions 	<ul style="list-style-type: none"> >15% material reuse, recycled content etc. 10% reduction in life cycle impact for new construction submitted through 100% CD 20 EPDS
Operational Carbon	<ul style="list-style-type: none"> 25% Reduction on EUI compared to similar program Utilize next-generation refrigerants Install on-site renewable energy Source 100% renewable electricity 	<ul style="list-style-type: none"> All-Electric, no new sources of combustion added 25% Reduction on EUI compared to ASHRAE 90.1-2010 100% new on- or off-site renewable electricity 	<ul style="list-style-type: none"> Meet ASHRAE 90.1-2010 mandatory requirements and achieve points for LEED Gold.
Public Health	<ul style="list-style-type: none"> Red List Commitment IAQ Standards FSC Wood Requirements 	<ul style="list-style-type: none"> Material Transparency Tracking A4 and A5 100% renewable improving air quality 	<ul style="list-style-type: none"> VOC emissions requirements Construction IAQ Improved HVAC filters



LEED v5 Carbon Changes

Deconstruction + Waste

Embodied Carbon

Onsite Emissions

Operational Carbon

C

A1-A3

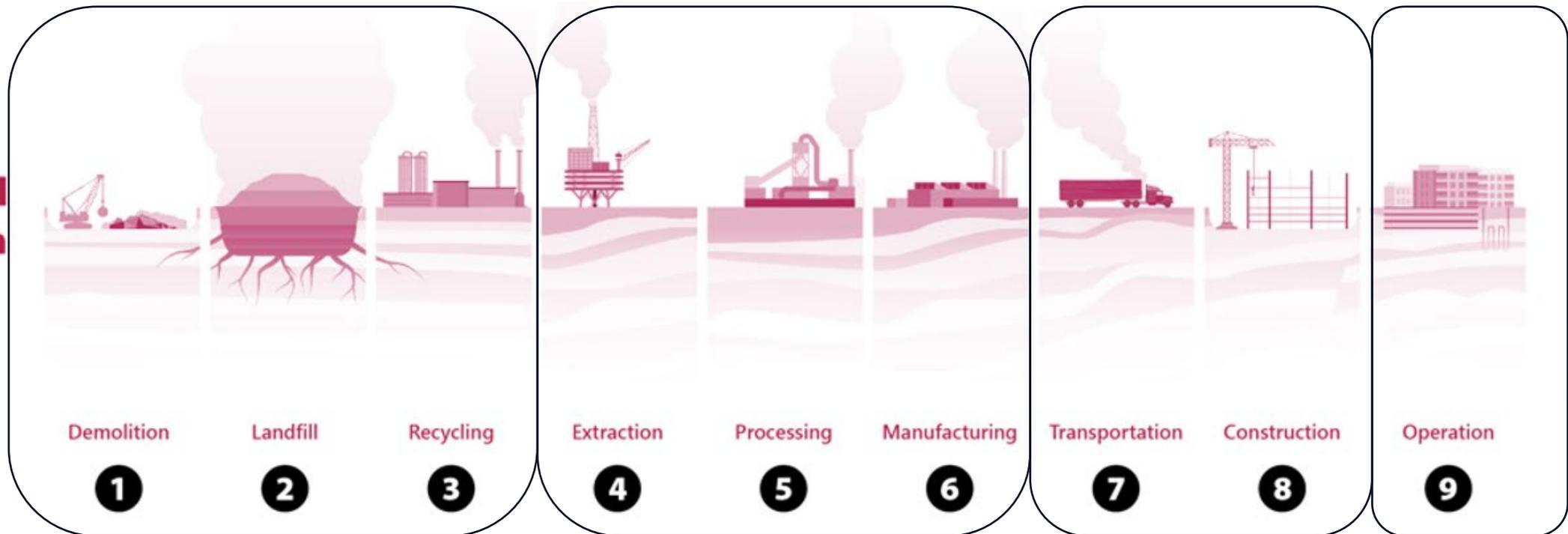
A4-A5

B

Scope 3

Scopes 1 & 2

Typical Approach



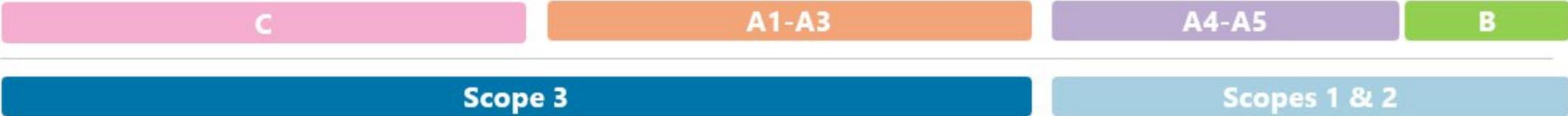
A circular, greener, low carbon approach

Deconstruction + Waste

Embodied Carbon

Onsite Emissions

Operational Carbon



Circular Approach



1

2

3

4

5

6

7

8

9

Deconstruction

Onsite & Offsite Reuse

Better Recycling

Industrial Decarbonization

Bio-Material Innovation

Net Zero Manufacturing

Clean Freight

Zero Emission Construction

Deconstruction



Keeping the Gilead Mission in mind

Deconstruction + Waste

Embodied Carbon

Onsite Emissions

Operational Carbon

C

A1-A3

A4-A5

B

Scope 3

Scopes 1 & 2

Health – Positive Approach



1

2

3

4

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9

Reduce demolition pollution

Improve local economic opportunities

Minimize future landfills

Eradicate fence-line community cancers

Invest in non-toxic supply chain

Safe-guard manufacturing workers' health

Improve freight corridor pollution

Protect construction worker health

Reduce demolition pollution



Early Planning



Design



Define Goal
and Scope



Design
Integration



Impact
Assessment



Interpret,
Prioritize,
Optimize



Preconstruction



Construct
Review



Bid
Language



Descope
Validation



Finalize
Plans



Execution Plans

Outline

- Purpose
- Scope
- Requirements
- Roles & Responsibilities
- Quality Assurance
- Tracking
- Change management
- Exceptions Log
- Appendices



Embodied Carbon Plan

- Life Cycle Assessment
- Emissions Factors
- Annual Logs



Material Action Plan

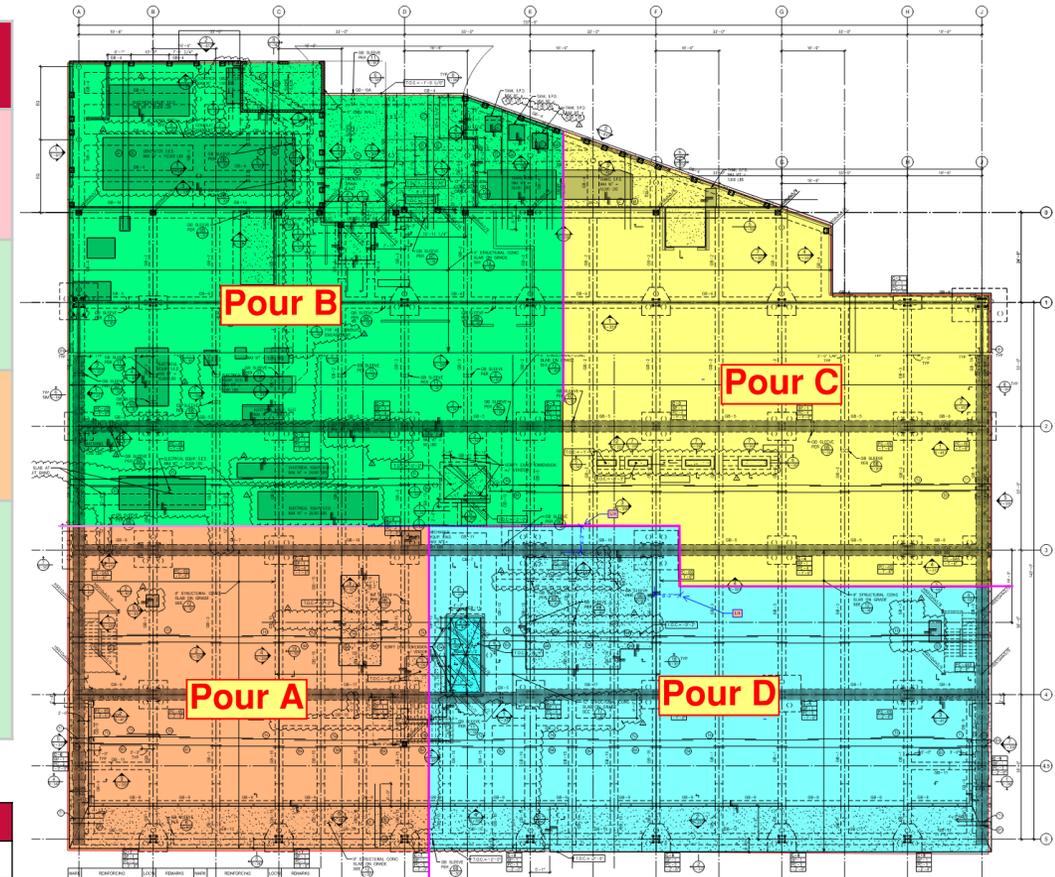
- Red List
- VOC Emissions
- Recycled Content



Choosing-by-advantage

Concrete

#	Mix Design	Location	Cost	Schedule	Workability	Embodied Carbon	Total
1	4000 psi @ 7 days	Areas A, B, C & D	1	3	2	1	7
2	4000 psi @ 56 days	Areas A, B, C & D	4	1	4	4	13
3	7000 psi @ 56 days	Areas A, B, C & D	2	3	2	2	9
4	4000 psi @ 56 days	Area B & C	3	4	3	3	13
	7000 psi @ 56 days	Area A & D					



Legend							
1	Highest Impact	2	Med-High Impact	3	Medium Impact	4	Lowest Impact



Choosing-by-advantage

Framing

#	Item	Cost	Sched Impact	LEED	GSS-01	Total
1	All Metal Framing - CSI	4	4	4	3	15
2	All Metal Framing - Nucor	2	1	4	4	11

Drywall

#	Item	Cost	Sched Impact	LEED	GSS-01	Total
1	Gypsum - USG Local Supplier	4	4	4	1	13
2	Gypsum - USG Non Local Supplier	2	2	4	4	12

Legend							
1	Highest Impact	2	Med-High Impact	3	Medium Impact	4	Lowest Impact



High Impact Red List Material Focus

Flooring



Formaldehyde, PVC, Phthalates, BPA

Furniture



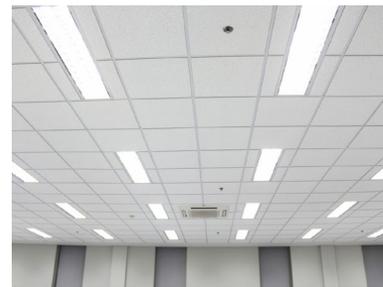
Formaldehyde, PVC, Phthalates, BPA, Halogenated Flame Retardants

Casework



Formaldehyde, BPA

Ceilings and Walls



Formaldehyde

Roofing



PVC, Phthalates

Windows



PVC, Phthalates

Paints & Coatings



Phthalates

Interior Insulation



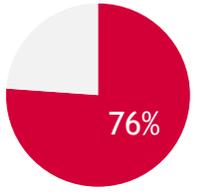
Halogenated Flame Retardants

Textiles



Halogenated Flame Retardants

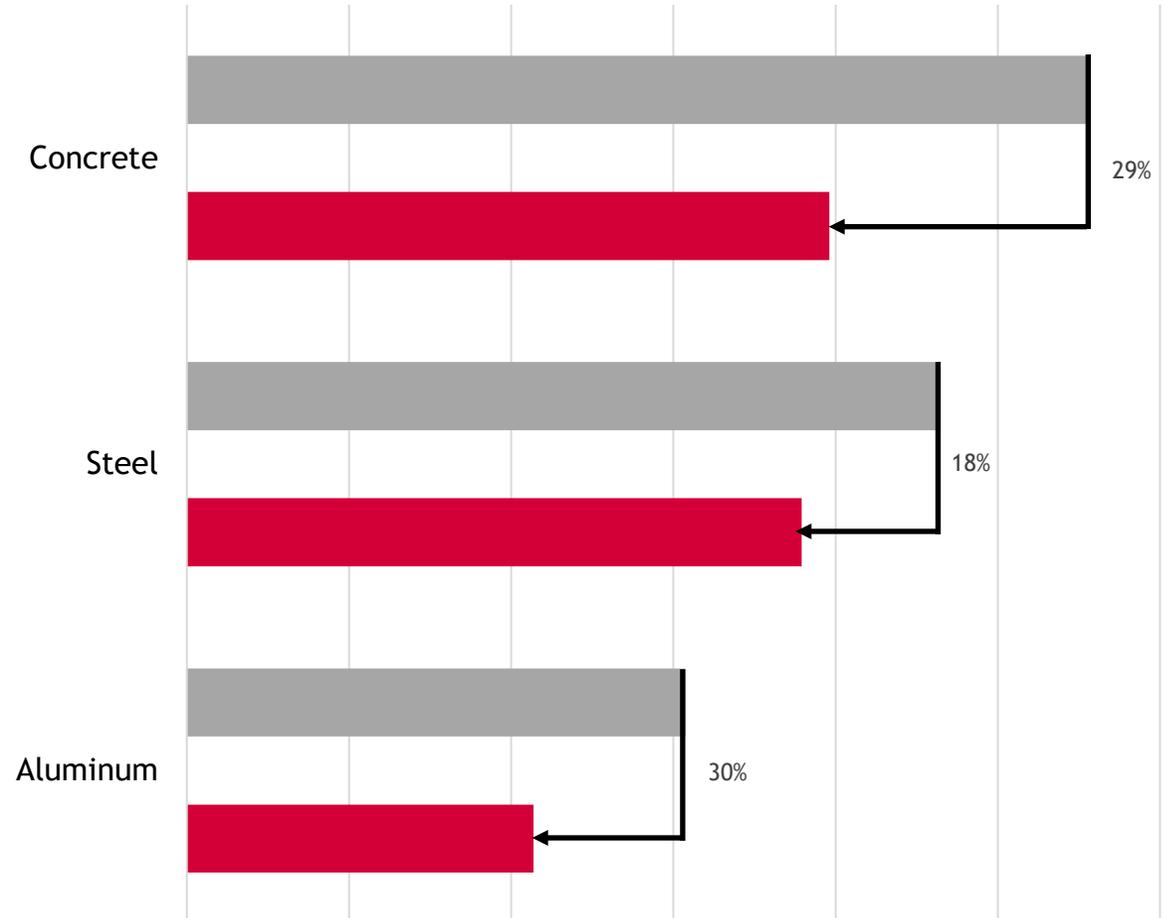


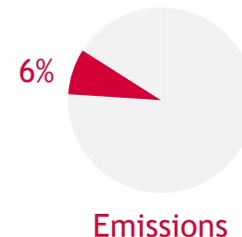


Emissions

Tracking + Improving A1-A3 Carbon

- Manual tracking
- Key factors
 - Embodied carbon
 - Cost
 - Schedule
- Key trade partner inputs
 - Environmental product declarations (EPDs)
 - Material quantities
- Big wins
 - Concrete
 - Steel
 - Aluminum





Tracking + Improving A4 Carbon

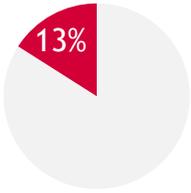
- Semi-automated tracking
- Key factors
 - Emission factors
 - Fuel efficiency
- Key trade partner inputs
 - Zip code
 - Vehicle type
 - Fuel type
- Lessons learned
 - Balancing A1-A3 and A4



The screenshot shows a software interface for tracking deliveries. The header includes 'GILEAD NRC331' and a 'Jobsite Command' button. Below the header is a table of delivery records. The table has columns for Arrival Time, Name, Status, Location, Team, and Equipment. A legend below the table defines status icons: Declined (white circle), Requested (orange circle), Scheduled (yellow circle), En Route (yellow circle with arrow), and Arrived (yellow circle with checkmark). The table lists various delivery items like 'Insulation Material', 'SM Misc Fittings & GRD's', and 'Metal Delivery' with their respective arrival times, locations, and teams.

Arrival Time	Name	Status	Location	Team	Equipment
10/15/2025, 07:00 AM	D&J Tile / Alex Cantu (2)	Requested	Gate B	D&J Tile	-
10/15/2025, 07:00 AM	Insulation Material (1)	Scheduled	Gate A	Raymond	-
10/15/2025, 07:30 AM	SM Misc Fittings & GRD's (1)	Scheduled	Gate B	Southland Industries	-
10/15/2025, 08:00 AM	Alex Cantu / D&J Tile (1)	Scheduled	Gate B	D&J Tile	-
10/15/2025, 09:00 AM	RT Western (1)	Scheduled	Gate A	RT Western	-
10/16/2025, 07:00 AM	Insulation Material (1)	Scheduled	Gate A	Raymond	-
10/16/2025, 09:00 AM	Enclos Panel Delivery (1)	Scheduled	Gate A	Enclos	-
10/17/2025, 07:00 AM	Metal Delivery (1)	Scheduled	Gate A	Raymond	-
10/18/2025, 07:00 AM	Fire & Dom Water street Cut i...	Scheduled	Gate A	A&B Construction	-
10/20/2025, 07:00 AM	Truck Crane/Flatbed Trailer - ...	Scheduled	Gate B	-	-

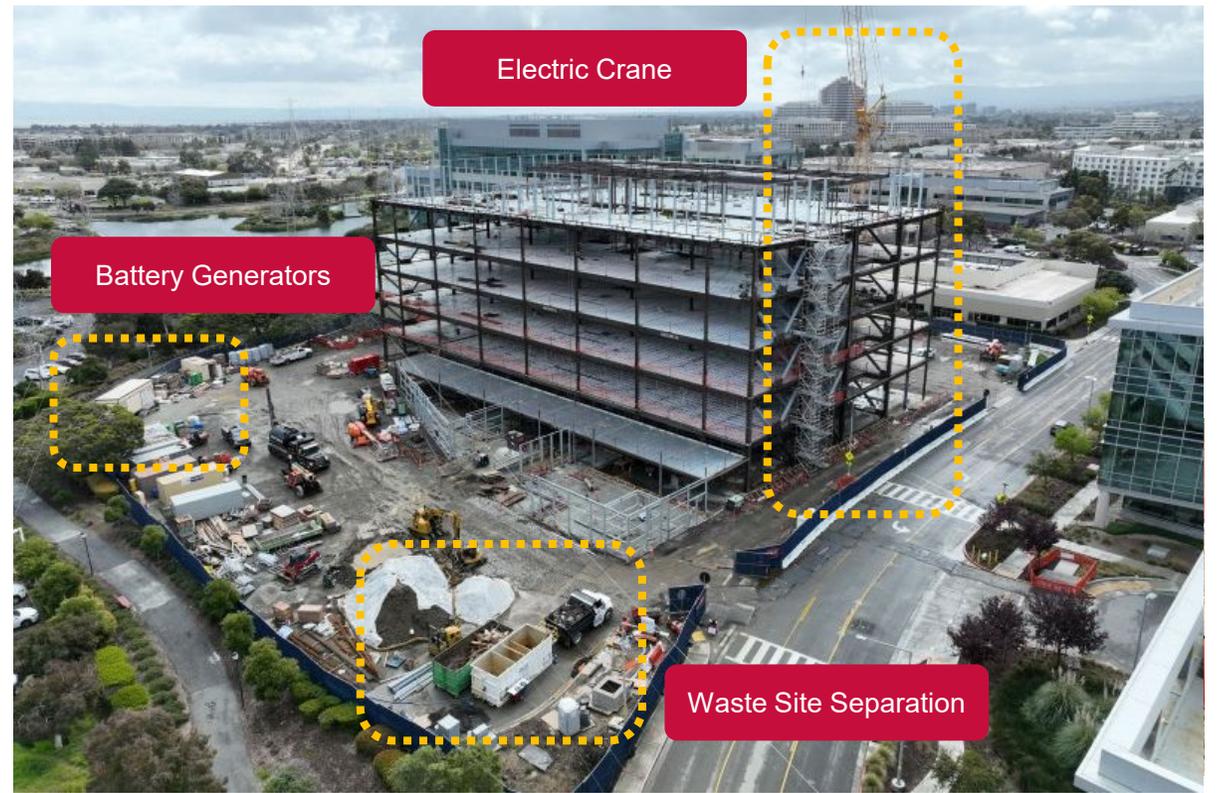




Emissions

Tracking + Improving A5 Carbon

- Manual tracking
- Key factors
 - Emission factors
 - Fuel efficiency
- Key trade partner inputs
 - Vehicle Type
 - Fuel Type
 - Runtime
- Lessons learned
 - Waste site separation
 - Electric equipment (Crane, Battery)
 - Understand existing metering



Tracking + Improving A3 Health

Intent: Proactively identify sustainable preferred products intended to meet Gilead's goals.

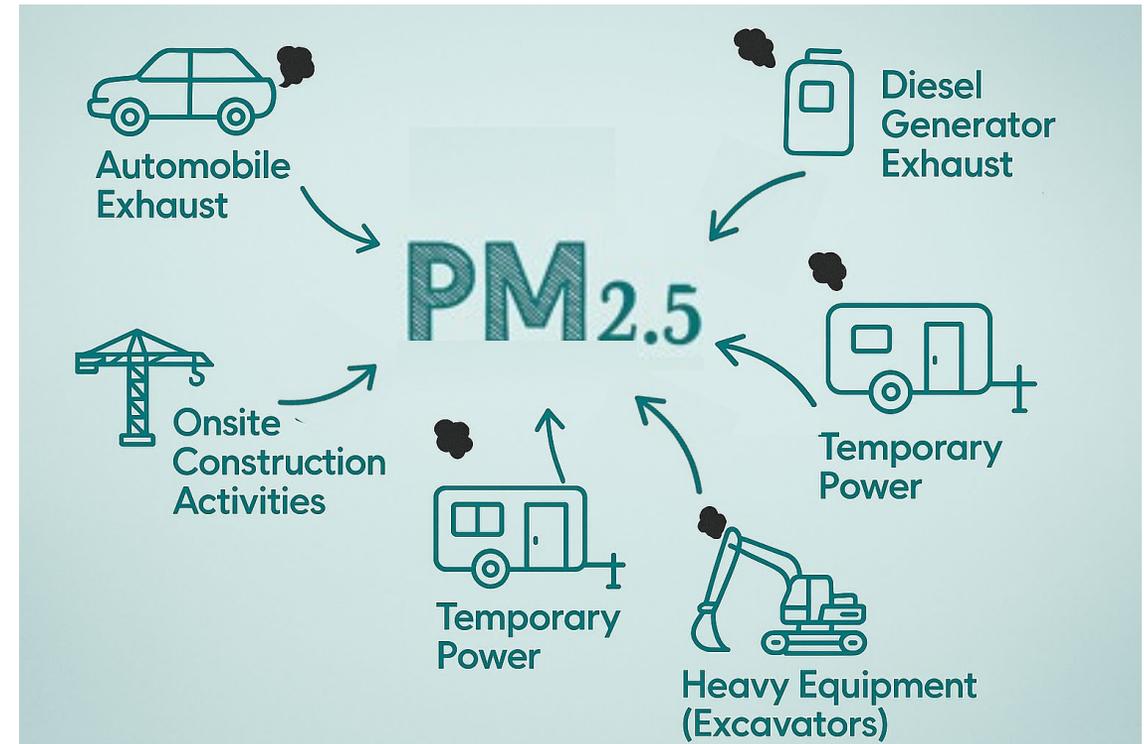
- A1-A3 carbon and the red list
- Right sizing a feasible, impactful health commitment
- Certification drivers + GSS-01
- Advocacy letter! Moving the market.
- Big wins so far:
 - Lab casework
 - Flooring
 - Gypsum

	Requirement	Product Research & Selection	Product Tracking	Specs & Submittals Coordination
Environmentally Preferable	EPDs (LEED)	Identify 20 products with EPDs (target most impactful)	Track anticipated EPDs using LEED BPDO tracker (EPD tab)	Use spec matrix and language template to coordinate*
	LCA (LEED) TBD LEED Pilot credit (expanded LCA)	Research and select low-carbon structure and envelope using LCA design model	Collect Material EPDs for the LCA design model . Include EPD products in LEED BPDO tracker.	Coordinate EPD and GWP requirements in specifications for steel, concrete, and façade
	GSS-01 Recycled Content / FSC TBD LEED Raw Sourcing	Research and select products that meet Gilead recycled content targets and FSC (50%)	GSS01 tracker , and/or LEED BPDO (Raw Sourcing tab w/mods)	Use spec matrix and language template to coordinate*
Healthy Materials	HPDs (LEED)	Identify 20 products with HPDs (target most impactful)	Track anticipated HPDs using LEED BPDO tracker (HPD tab)	Coordinate using spec matrix and spec language template*
	Product Emissions and VOC limits Incl GSS-01 and CalGreen	Research and select products that meet emissions standards (CDPH and VOCs).	Track product certifications for all categories using LEED Low-Emitting tracker.	Coordinate using spec matrix and spec language template*
	GSS-01 Red List TBD Expanded Red List	Research and select products that meet Gilead Red List criteria. (Red2Green database?)	GSS01 RedList tracker , or Red2Green. Include applicable products in LEED Low-Emitting & BPDO trackers	Use spec matrix and language template to coordinate*

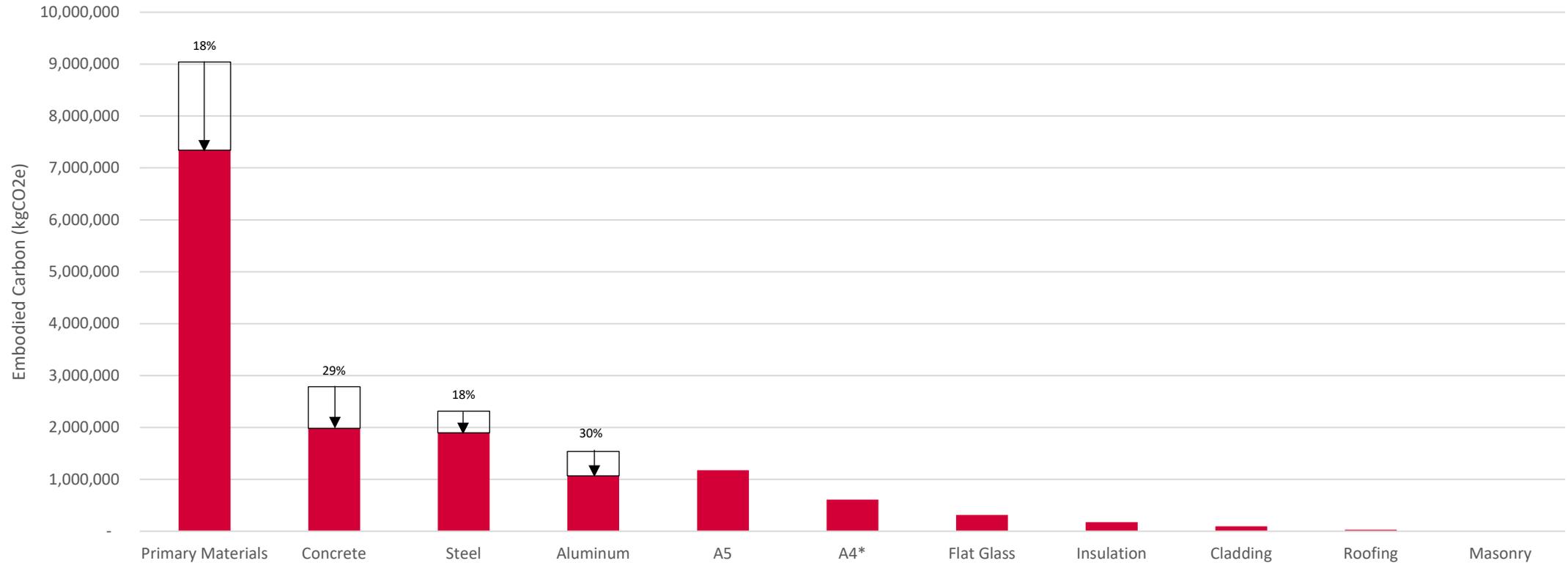


Getting to A4 & A5 Considerations for Health

- Primary concerns:
 - Particulate Matter (PM 2.5)
 - Nitrogen Oxides (NOx)
 - Sulfur Oxides (SOx)
- Public Health Realities
 - Respiratory + Cardiac events
 - Asthma
 - Smog + Acid Rain
- Public Health Advocacy
 - Accurate tracking
 - Fuel switching & equipment decarb
 - Starting with Idling policies (low hanging fruit)



Embodied Carbon Results



Delivering measurable impact—18% less embodied carbon than baseline



Circular Material Challenges

Vaults



Requirement: 10% preconsumer
Actual: 5% preconsumer

Shaftwalls



Requirement: 25% post-consumer
Actual: 12% post-consumer

Metal Framing



Requirement: 25% post-consumer
Actual: 17% post-consumer

Shotcrete



Requirement: 10% preconsumer
Actual: 3% preconsumer

Slurry Wall



Requirement: 10% preconsumer
Actual: 1% preconsumer

Glass Mat



Requirement: 25% post-consumer
Actual: 0% post-consumer

Control Joint



Requirement: 25% post-consumer
Actual: 19.8% post-consumer

Polyiso Insulation



Requirement: 25% post-consumer
Actual: 0% post-consumer

Tile Carpeting



Requirement: 25% post-consumer
Actual: 21% post-consumer**

Unit Pavers



Requirement: 10% pre-consumer
Actual: 0% post-consumer



Healthy Material Challenges

Shaftwalls



Formaldehyde

Cementitious Panels



CDPH v1.2-2017 Testing **

Interior Glazing



PVC, Phthalates **

Toilet Partitions



Formaldehyde, PVC, Phthalates, BPA, Halogenated Flame Retardants

Glass Mat



CDPH v1.2-2017 Testing
Formaldehyde

Flexible Gypsum



CDPH v1.2-2017 Testing
Formaldehyde

Plastic Laminate



Formaldehyde, BPA

High Performance Coatings



Phthalates **



Lessons Learned



Owner

- Implement robust infrastructure to assess escalations and non-conformance
- Create clear alignment with company Scope 3 GHG reduction targets
- Define “emissions boundary.”



Sustainability Consultant

- Define roles and responsibilities for refining life cycle assessment for as-built condition.
- If sustainability consultant maintains model, create tool for data share.
- Generate buy-in day 1 through empathy and proactive approach.

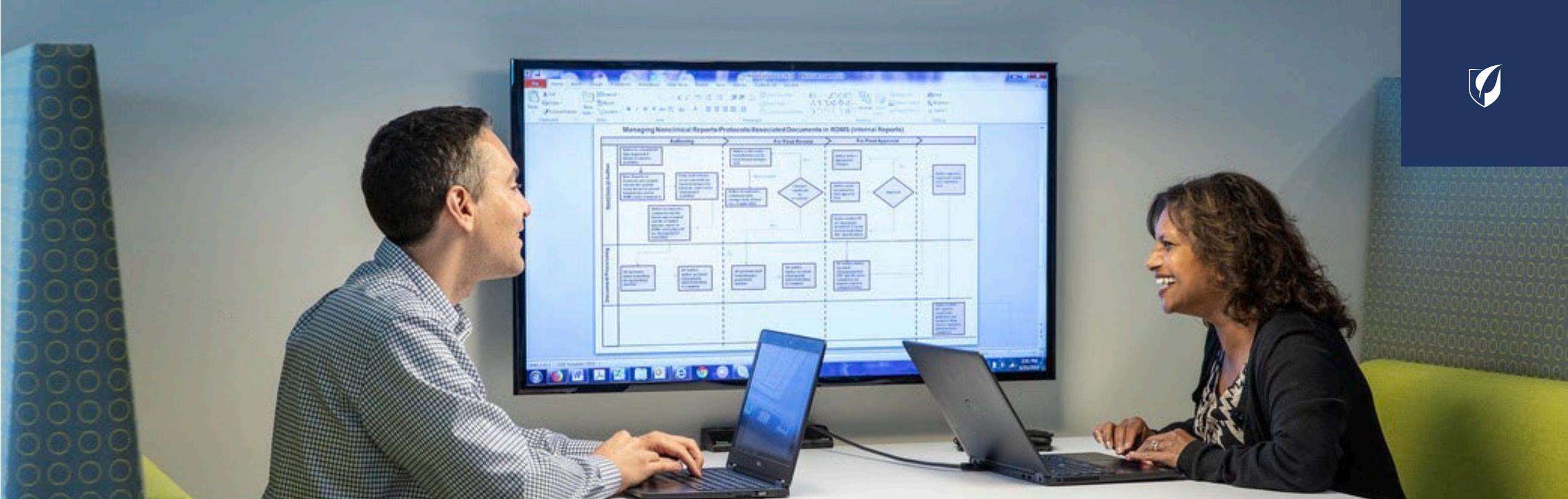


Contractor

- Material target pre-construction collaboration
- Reconcile specifications with embodied carbon targets
- Define change management process for noncompliance

All stakeholders drive performance and value for carbon AND health!





Thank You

ILFI Zero Carbon



Deconstruction

Reuse



Audit



Offsite



Onsite

Embodied

Materials



Heavy, High Carbon



Light, Low Carbon



Circularity

Embodied Carbon*

500
kgCO₂e/sqm.

ILFI Ceiling

442
kgCO₂e/sqm

ILFI A1-A5 Target

384
kgCO₂e/sqm

A1-A3 100% CD
estimate

Onsite

Utility & Fuels



Diesel / Nat gas



Utility Electricity



100%
Renewables

Operational

Energy Use Intensity**

257
kBtu/sq.ft.

Baseline I2SL

192
kBtu/sq.ft

ILFI (25%
improv.)

137
kBtu/sq.ft.

100% CD (46.5%
improv.)

