

Wood in the 21st Century Drivers, Barriers, & Opportunities,

Peter Moonen, National Sustainability Manager
Canadian Wood Council





REPRESENTS the Canadian wood products industry through a national federation of associations.

OUR VISION -- to be passionate, credible agents of change leading an advanced and sustainable wood culture.

OUR MISSION -- to expand market access and increase demand for Canadian wood products through excellence in codes, standards, regulations and education.

EDUCATION -- The Council produces technical information about wood products to:

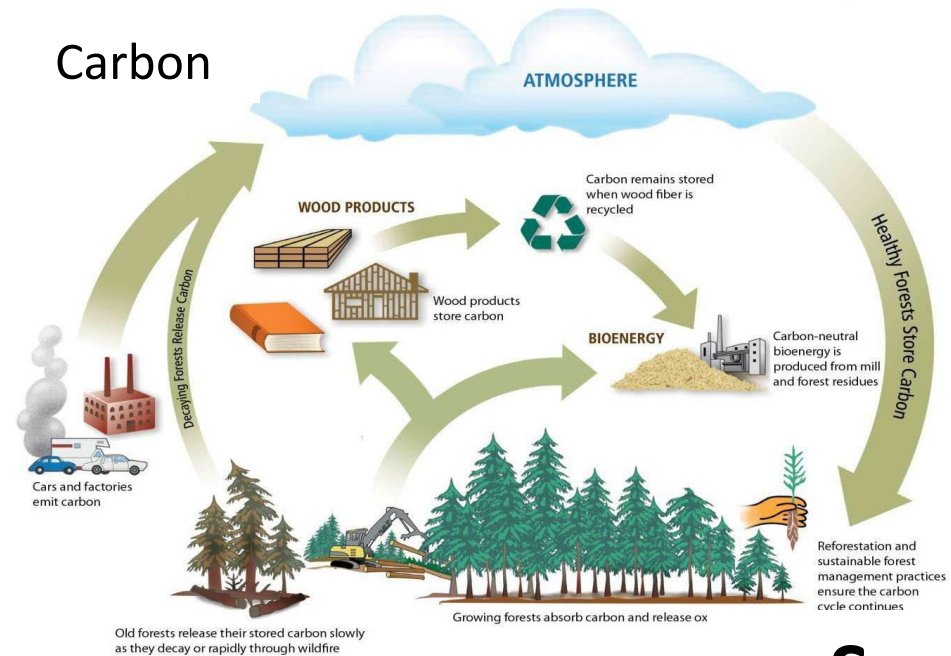
- The design, construction and academic communities;
- Building and regulatory officials
- Key influencers in construction practices and material selection





Sustainable Forestry Carbon Cycle

Carbon



- Procurement initiatives



Sustainability Drivers



- Healthy Buildings

Images Courtesy FPInnovations and Naturally Wood



- Energy Efficiency

With more Canadians renting and fewer affordable units, housing advisory panel urges Ottawa to step in



Affordability

Housing Units Per 1,000 Residents in G7 Countries



Social Drivers -- Housing



Immigration



Densification



Demographics → Labour

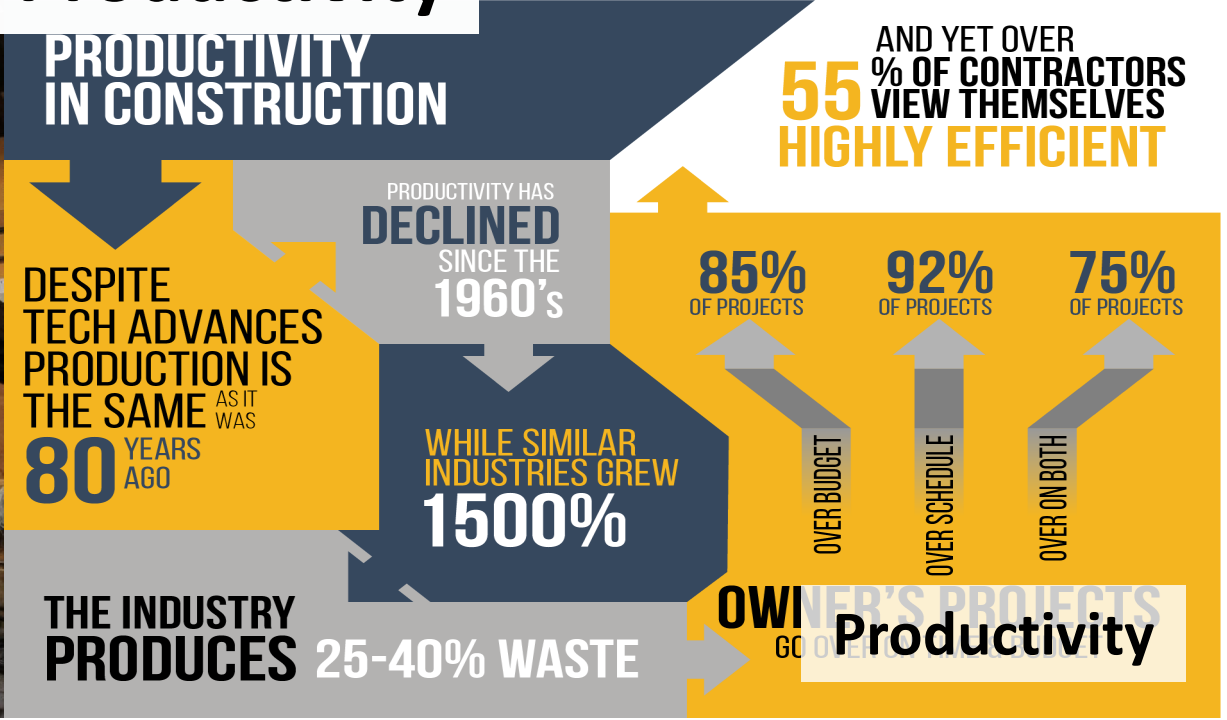


Skills Training

Labour, Skills, Productivity



Research And Development





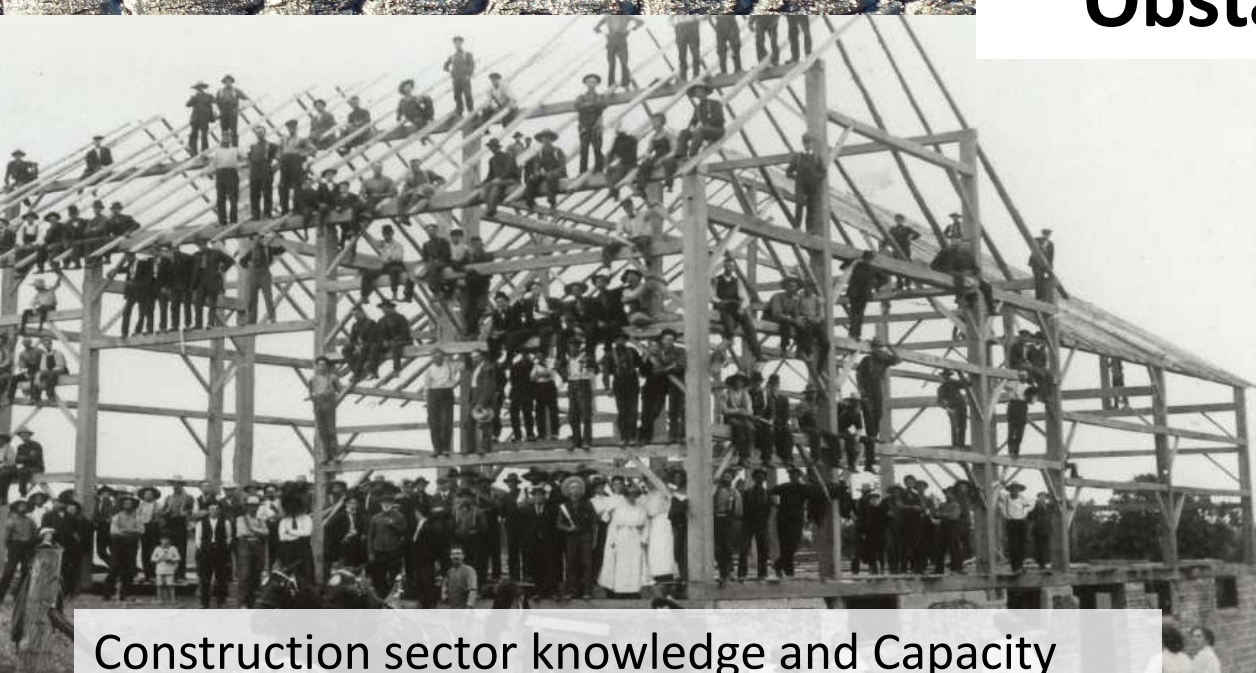
Code / Fire Regulations



Fibre Supply

Photo Courtesy FII/Naturallywood

Obstacles



Construction sector knowledge and Capacity



Tariff / Trade Barriers



A By-law to amend
Development By-law No. 3575
regarding mass timber buildings

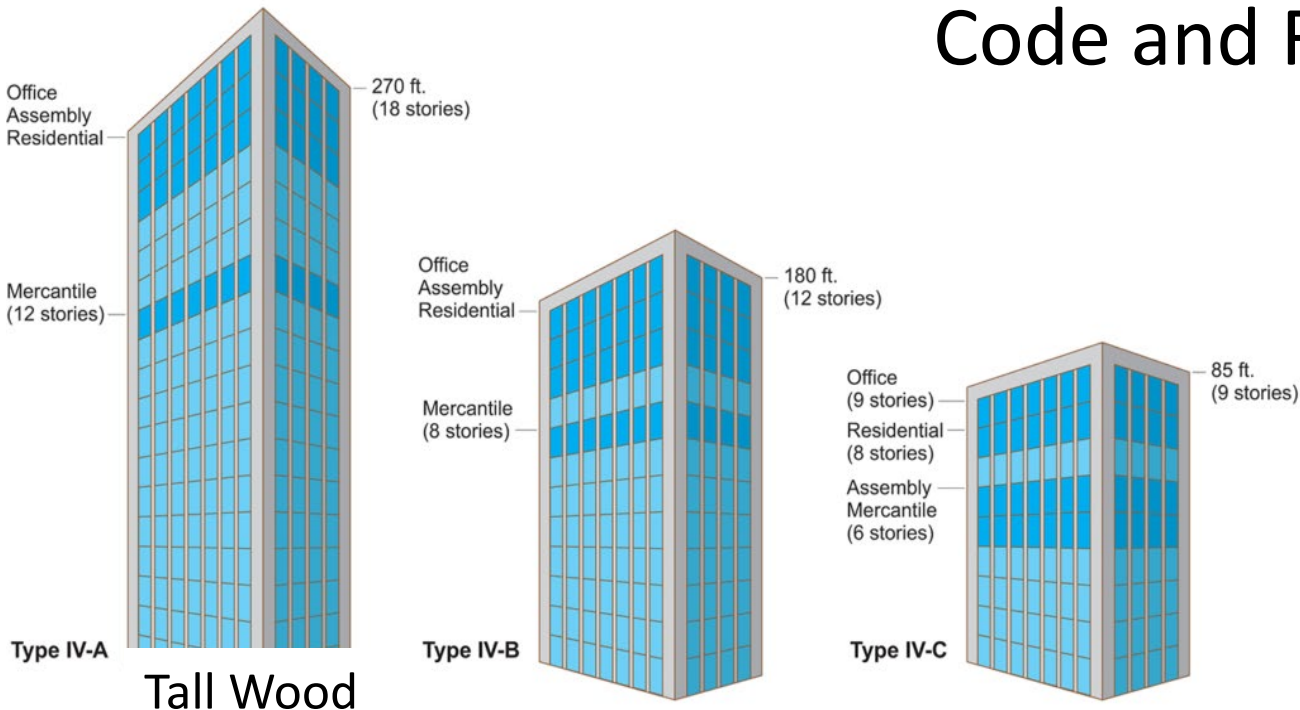
Municipal Incentives

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

1. This by-law amends the indicated provisions of the Zoning and Development By-law No. 3575.
2. Council strikes out section 10.22.1 and substitutes the following:

"10.22.1 For a mass timber building that is 7 storeys or more, the maximum building height is the maximum building height set out in the applicable district schedule, plus an additional 10%, except that this section shall not apply to a CD-1 district."

10.22.2 For a mass timber building that is 7 storeys or more, the Director of Planning may vary the yards, setbacks, site coverage, building depth and external design regulations in the applicable district schedule, if the Director of Planning considers the intent of the district schedule and all applicable



Code and Fire Regulations



Fire and Code Issues



Research / Testing



Protected areas



Forest Health



Fibre Supply



Labour

INDIGENOUS COMMUNITIES & FORESTRY IN CANADA



The forest sector is a **key provider of jobs and income** in approximately **300 Canadian communities**, including many **Indigenous communities**.

Forest sector employment is particularly important in many rural and Indigenous communities, where forest-related work is often the main source of income.



11,600

Indigenous People employed by Canada's forestry sector, making it **one of the largest Indigenous employers** in the country



1,400

more than **1,400 Indigenous-owned businesses** operate in the forest sector

Tenures



Forest Degradation Policies

FREE WEBINAR

Preferred by Nature

Proposed EU Deforestation Regulation - Introducing the main elements and requirements for European companies

Understand what to prepare for when this proposed regulation steps into force

3 March 2022

10.00 - 11.15 am (CET)

Sign up now!

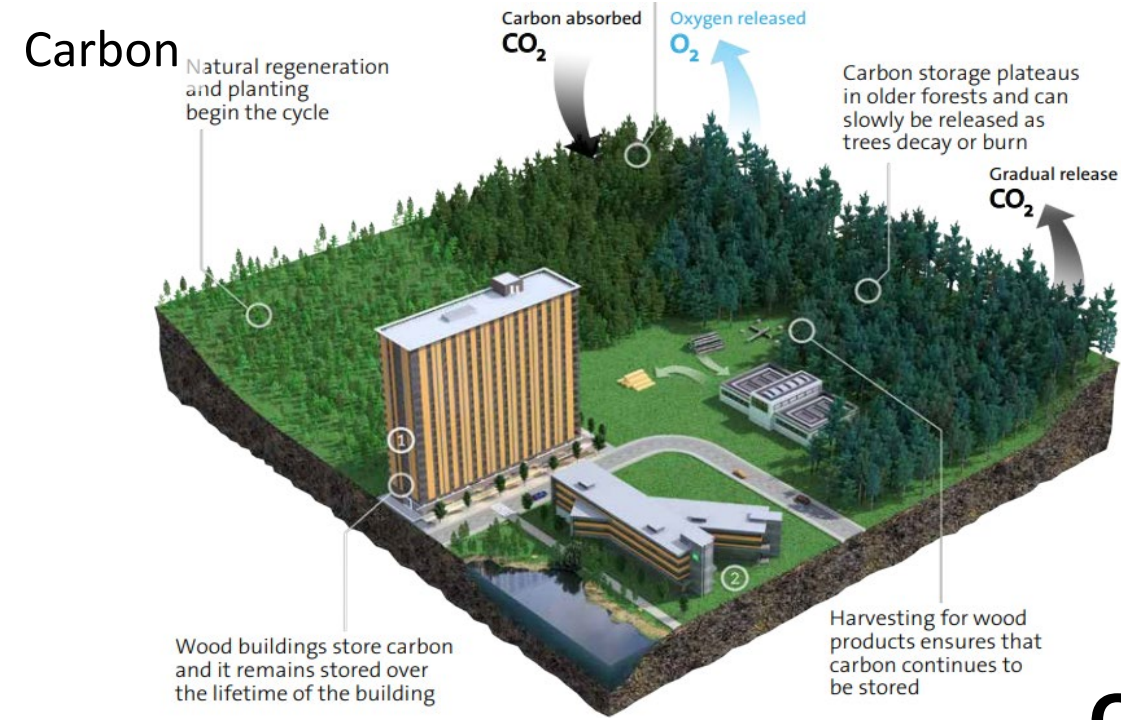
#LIFELegalWood



Non-Tariff Trade barriers -- IRA



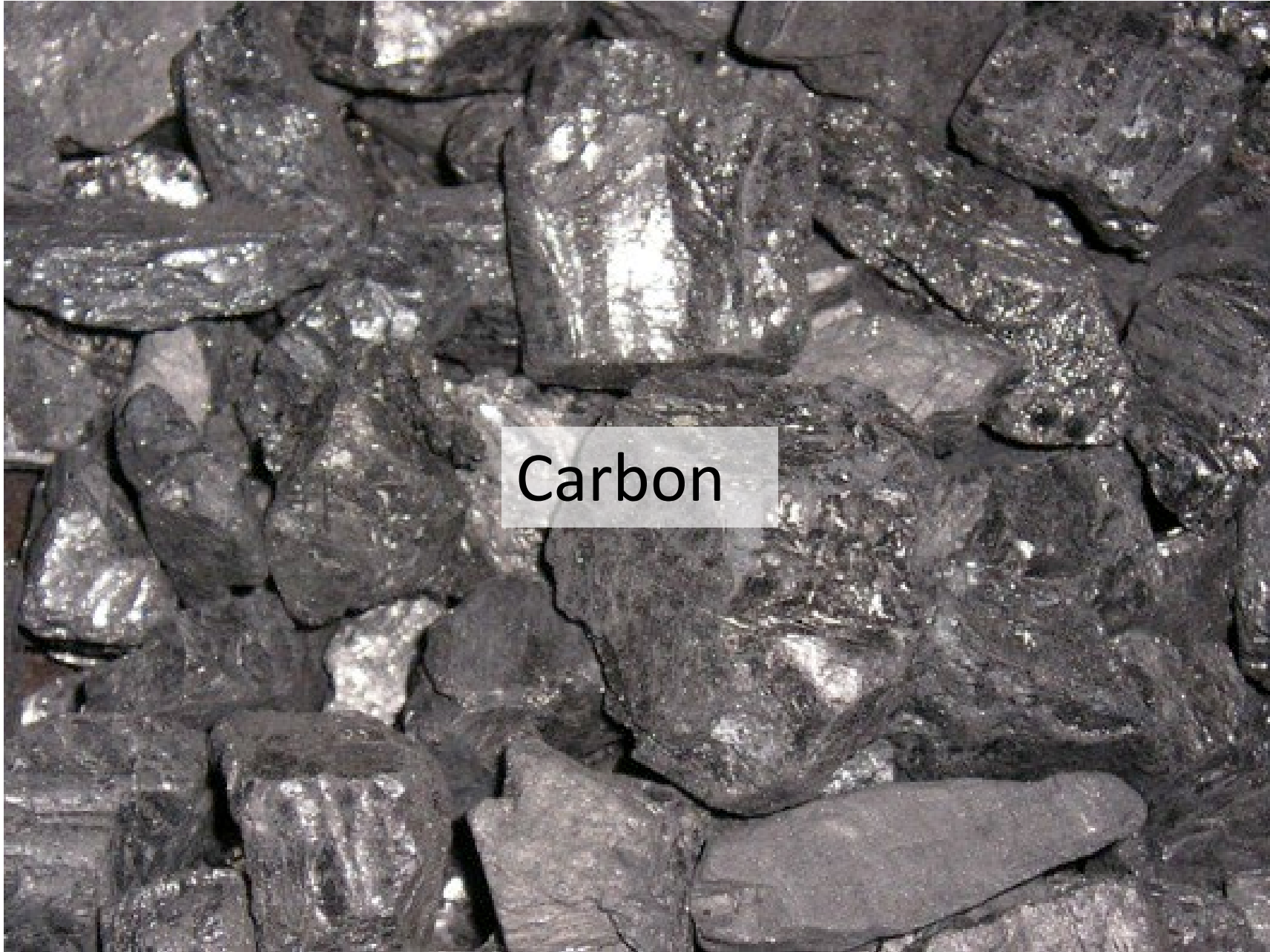
Imports



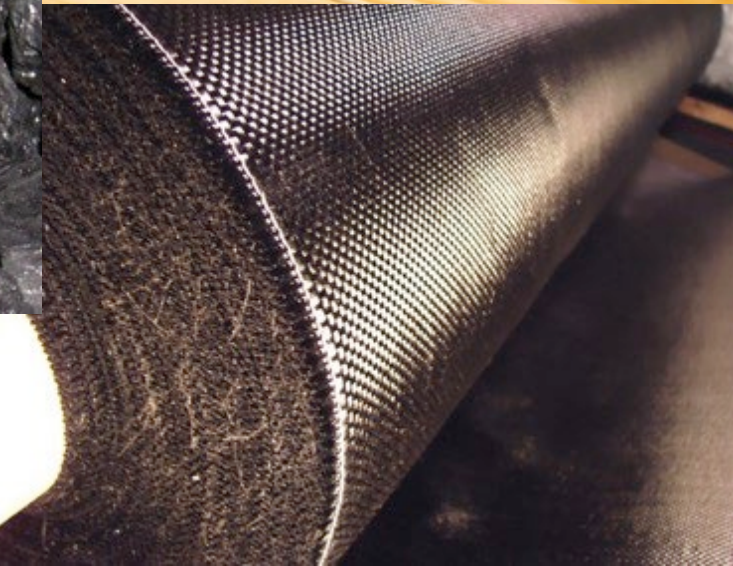
Opportunities



Technologies, Product Diversification, Integration

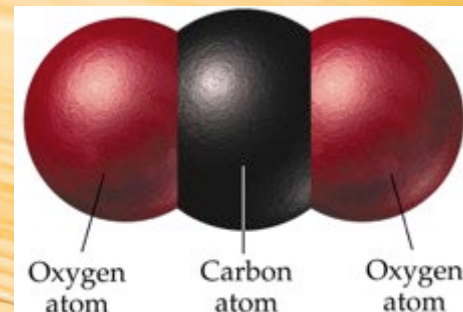
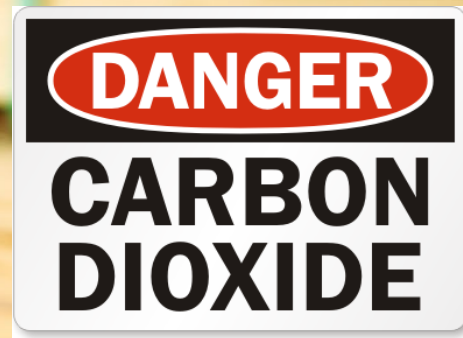
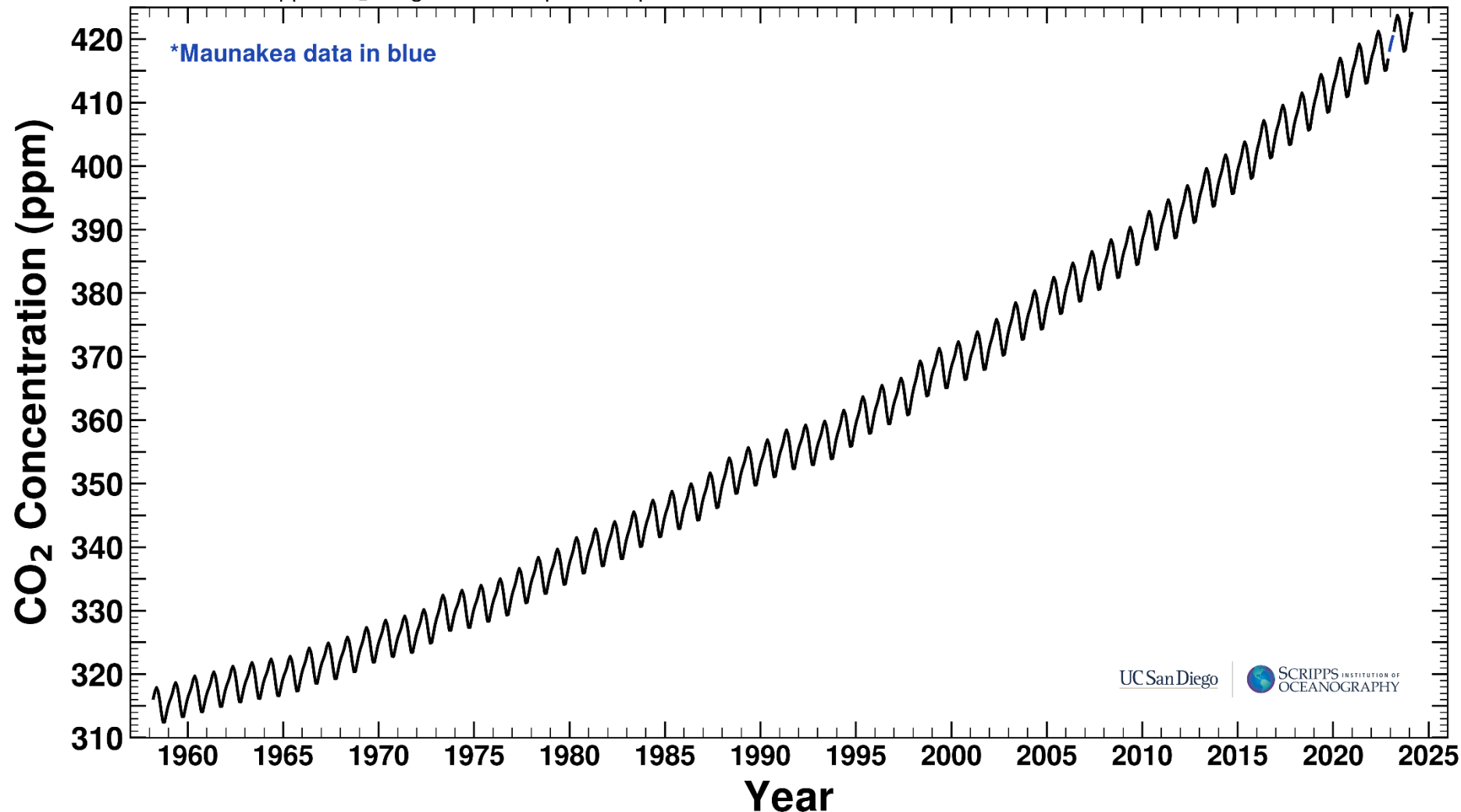


Carbon



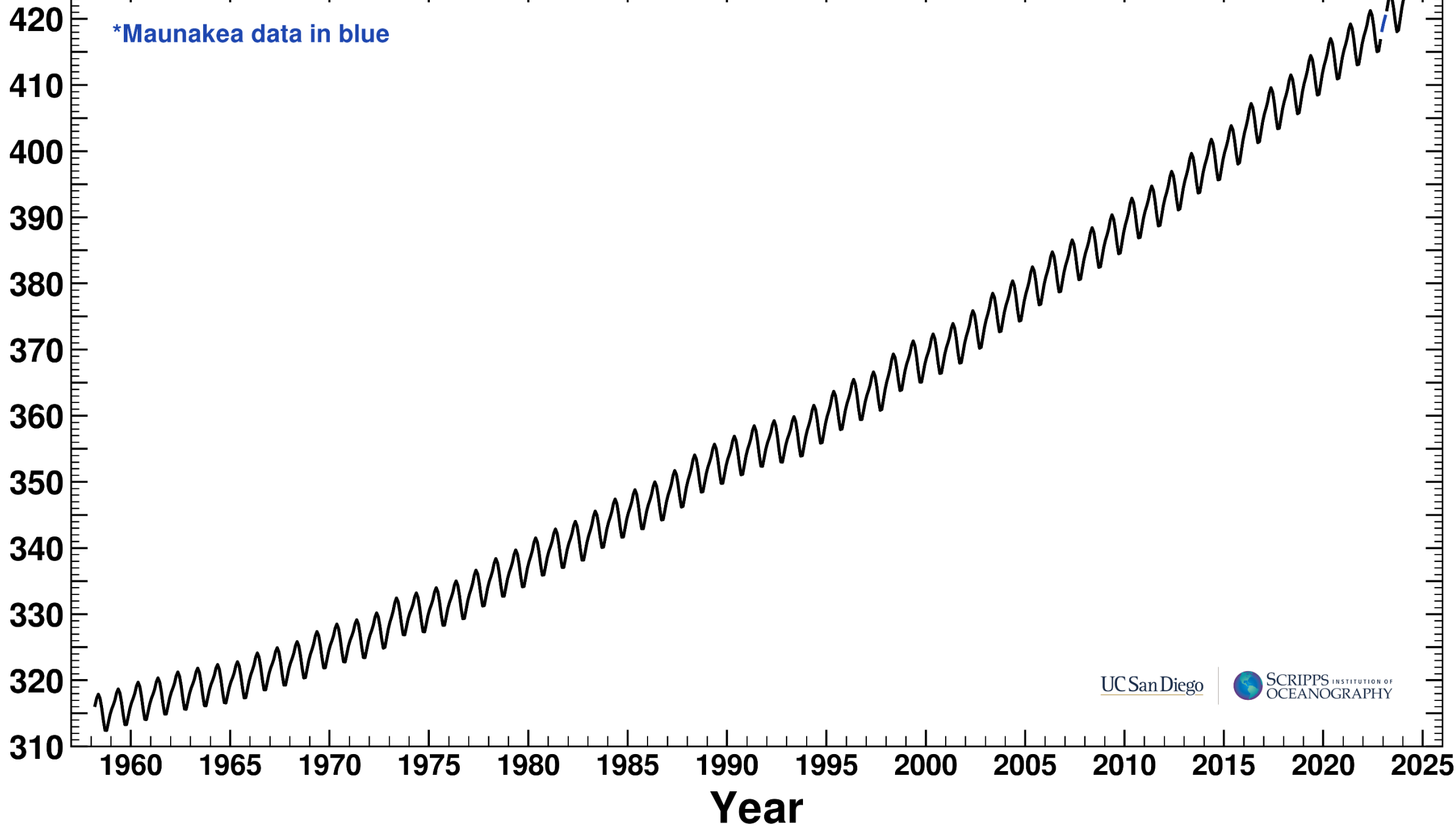
Mauna Loa Observatory, Hawaii* Monthly Average Carbon Dioxide Concentration

Data from Scripps CO₂ Program Last updated April 2024



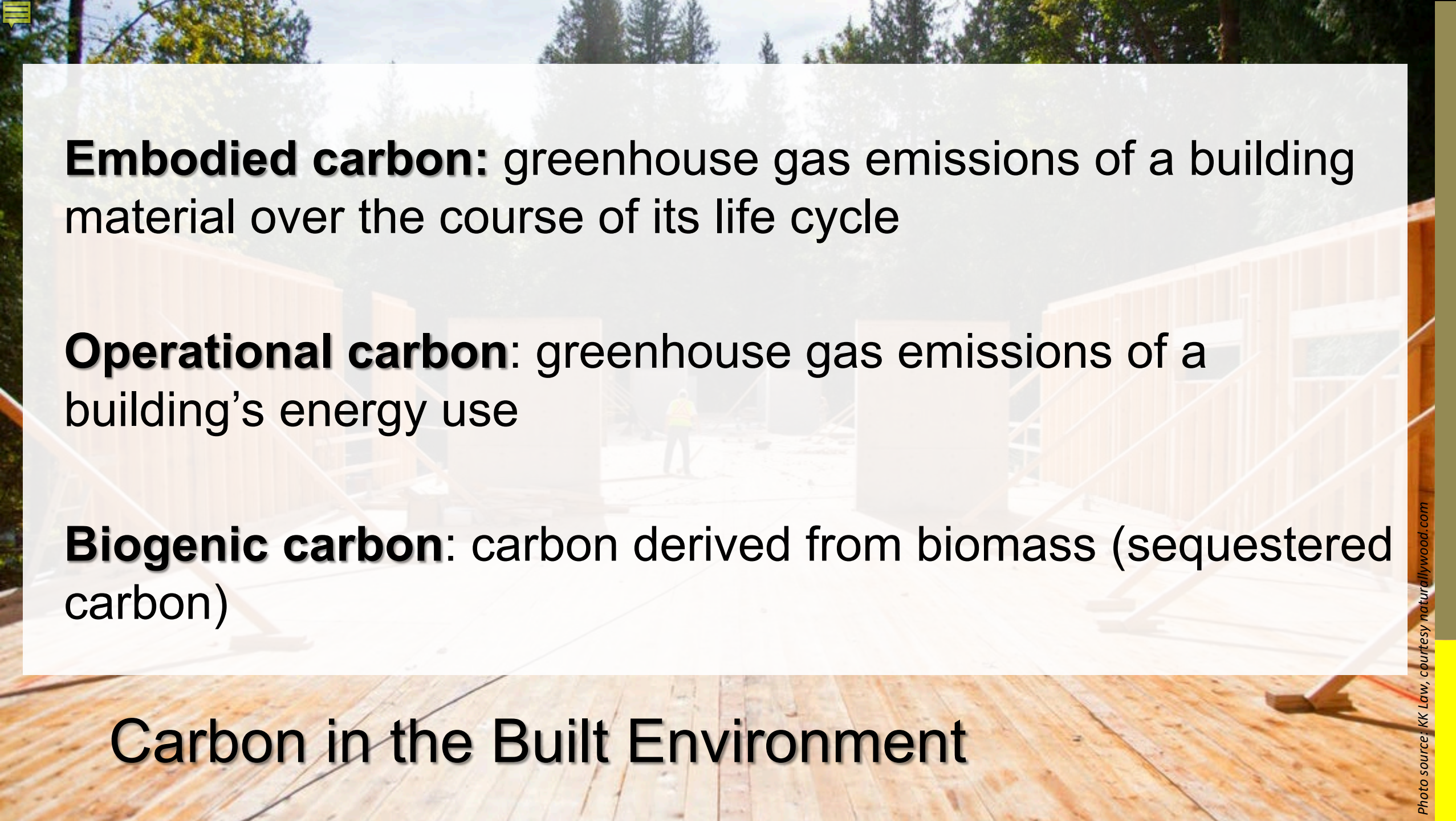
CO₂ Concentration (ppm)

*Maunakea data in blue



UC San Diego

SCRIPPS INSTITUTION OF
OCEANOGRAPHY



Embodied carbon: greenhouse gas emissions of a building material over the course of its life cycle

Operational carbon: greenhouse gas emissions of a building's energy use

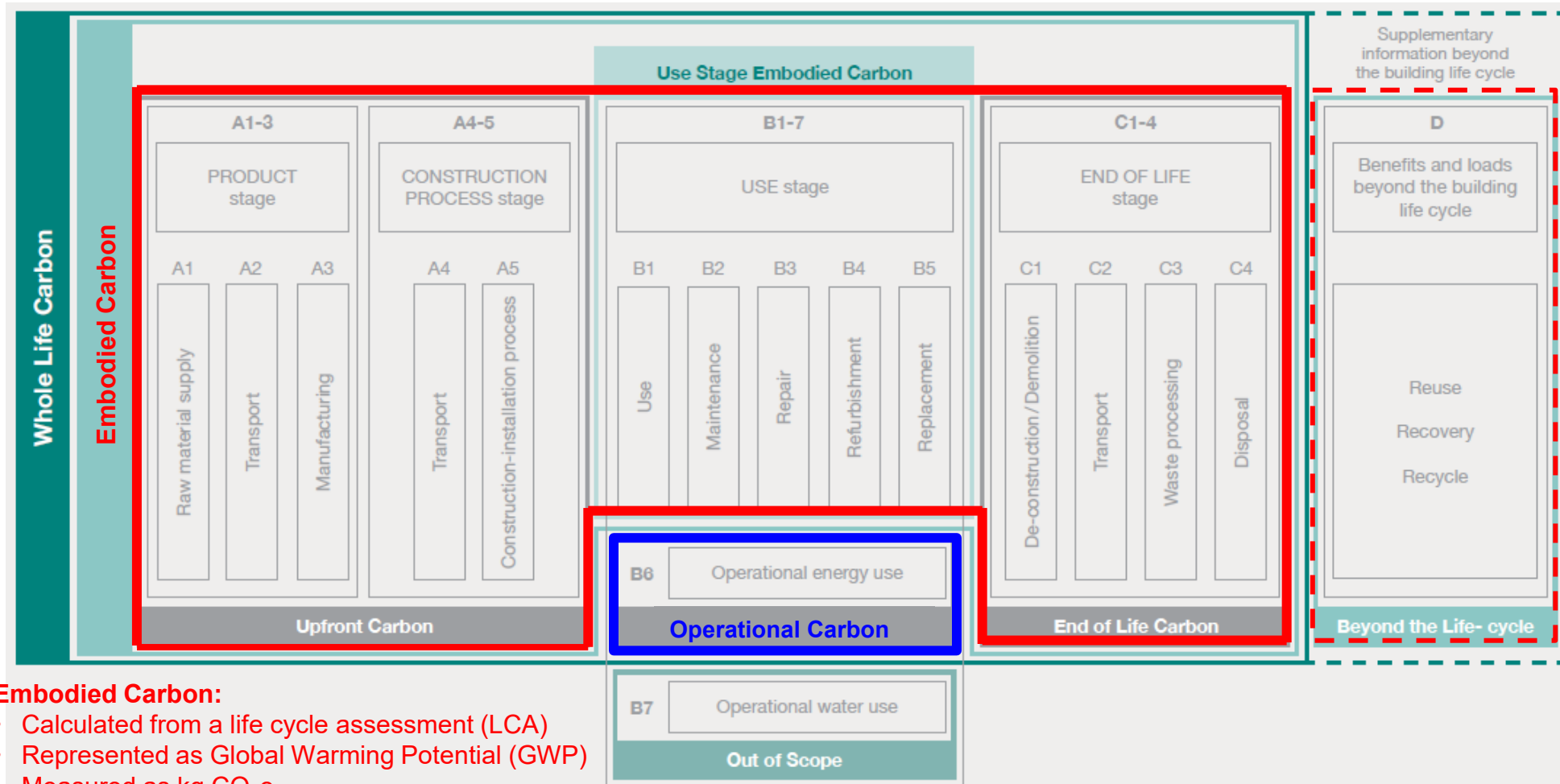
Biogenic carbon: carbon derived from biomass (sequestered carbon)

Carbon in the Built Environment



LCA, LCI, LCA², PCR, EPD, WBLCA,
GWP, ODP, AP, EP
kgCO_{2e}, POCP

What's with all the Initials?



Embodied Carbon:

- Calculated from a life cycle assessment (LCA)
- Represented as Global Warming Potential (GWP)
- Measured as kg CO₂e

Figure source: CaGBC Zero Carbon Building: Design Standard v3

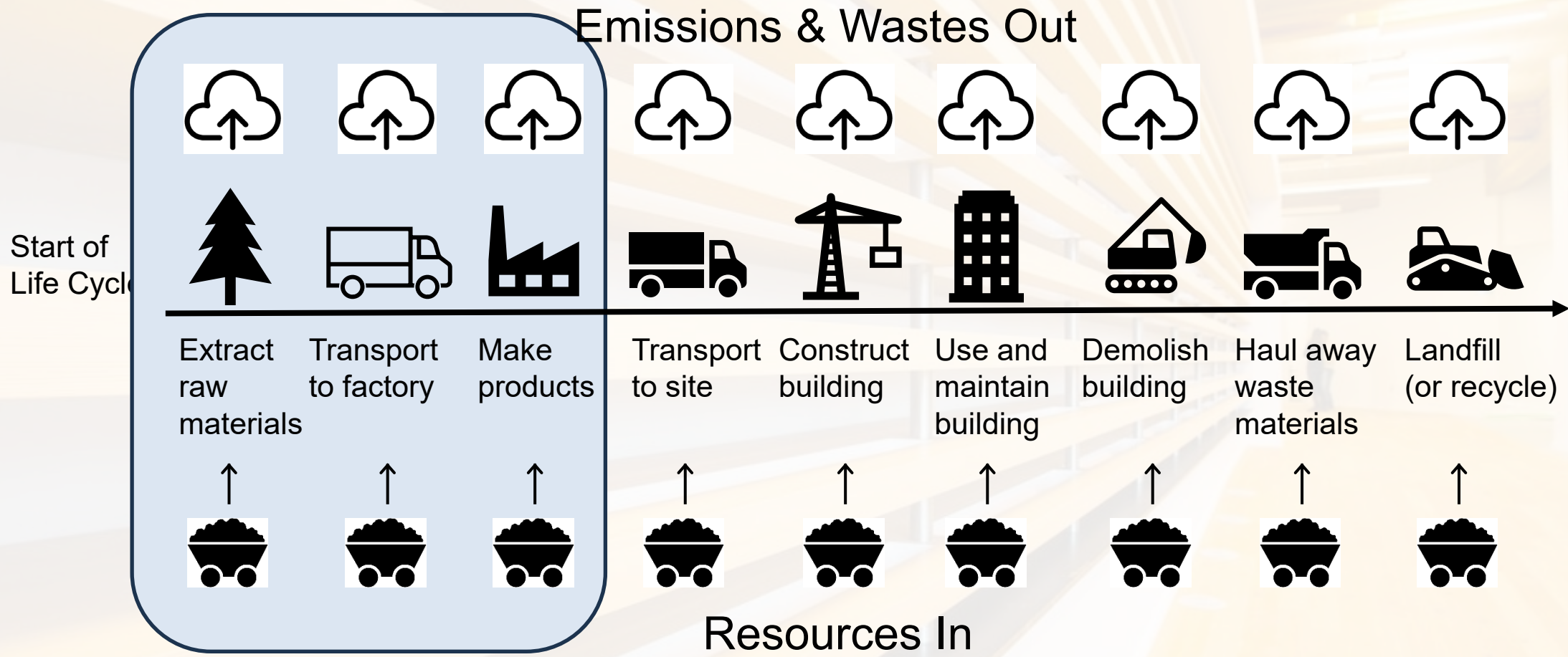
Whole Life Carbon



National Research Council LCA²

- Low-carbon assets through life cycle assessment
- Life cycle inventory (LCI) database
- Regionally specific wood data for:
 - Lumber
 - Plywood
 - OSB
 - Trusses
 - I-Joists

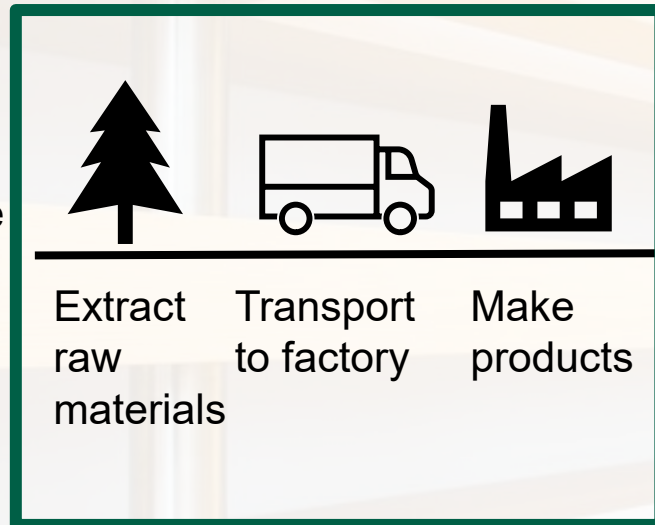
NRC LCA² Data Gathering



NRC LCA² Data Gathering

Scope of NRC LCA²
Cradle-to-Gate (A1-A3)

Start of
Life Cycle



Life Cycle Analysis Industry Data Survey, 2023

1. Operational Status
2. Production Output
3. Transformative/Innovative Products
4. Inputs (logs, lumber, resins, metals, etc.)
5. Fuel
6. Electricity
7. Steam Output
8. Air Emissions
9. Residual Outputs

Data Collection Process



Harvesting

Loading



Mileage



Milling
Energy



Drying
Energy



Co-Products



Residues



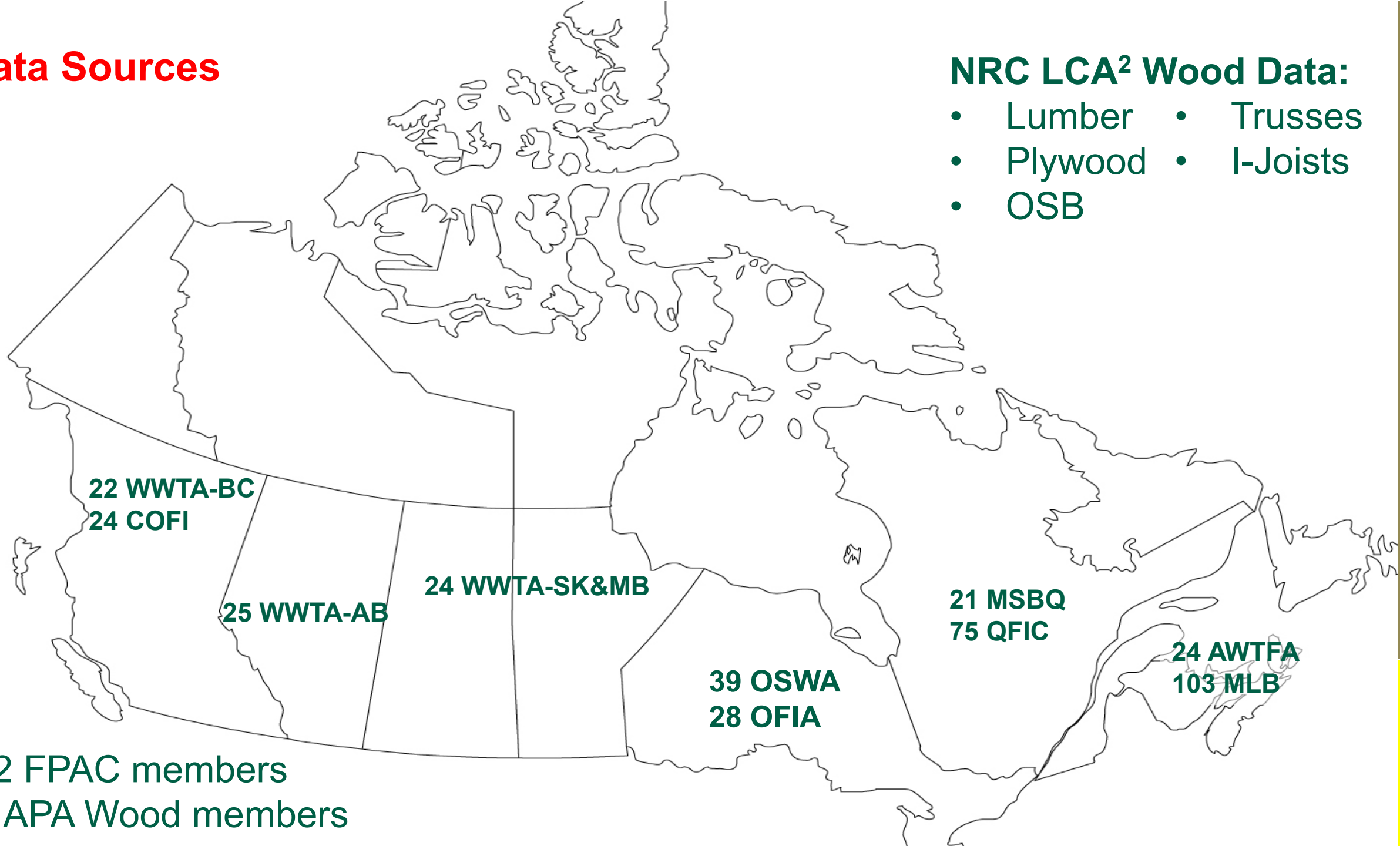
\$



Data Sources

NRC LCA² Wood Data:

- Lumber
- Plywood
- OSB
- Trusses
- I-Joists

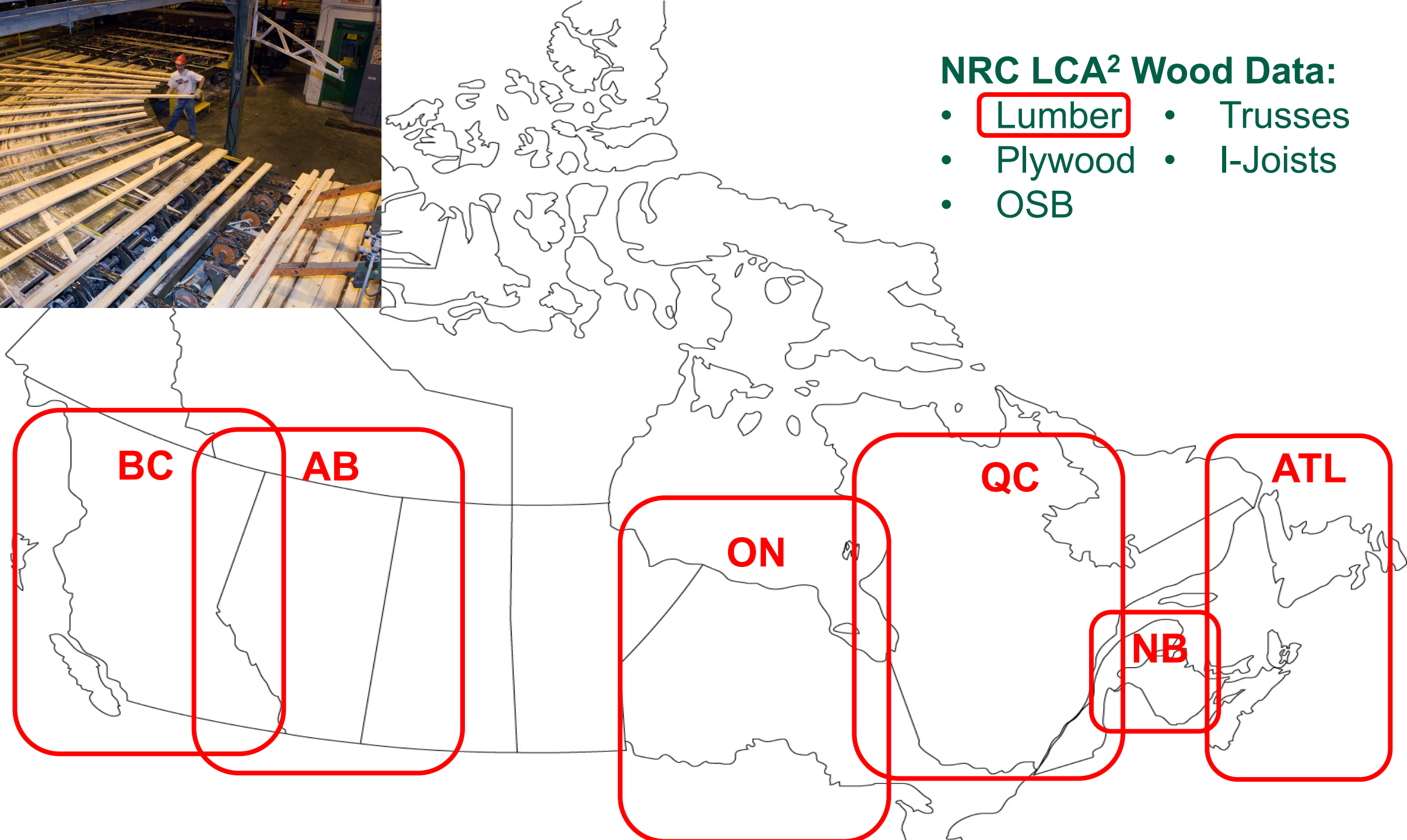


112 FPAC members
27 APA Wood members



NRC LCA² Wood Data:

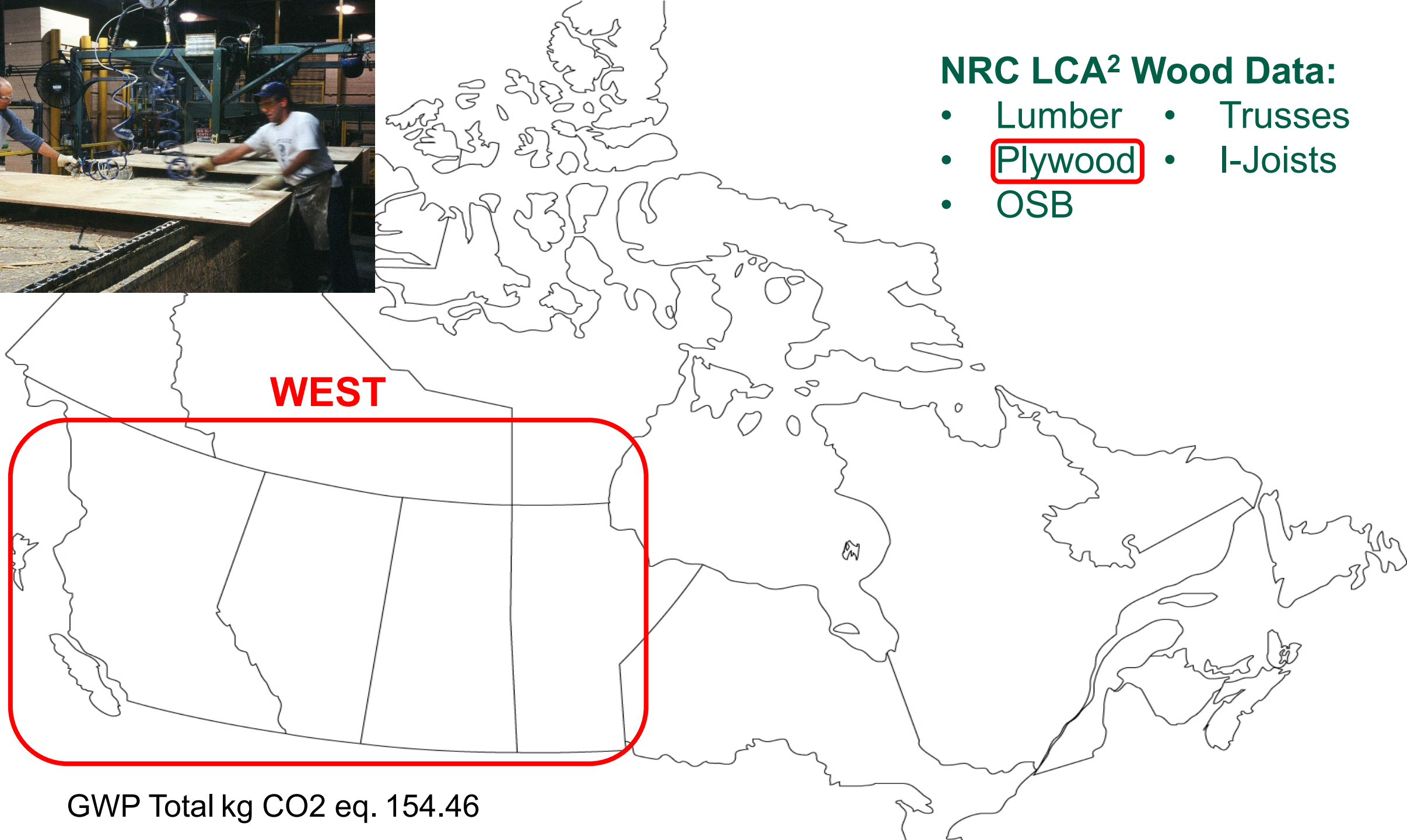
- **Lumber**
- Plywood
- OSB
- Trusses
- I-Joists



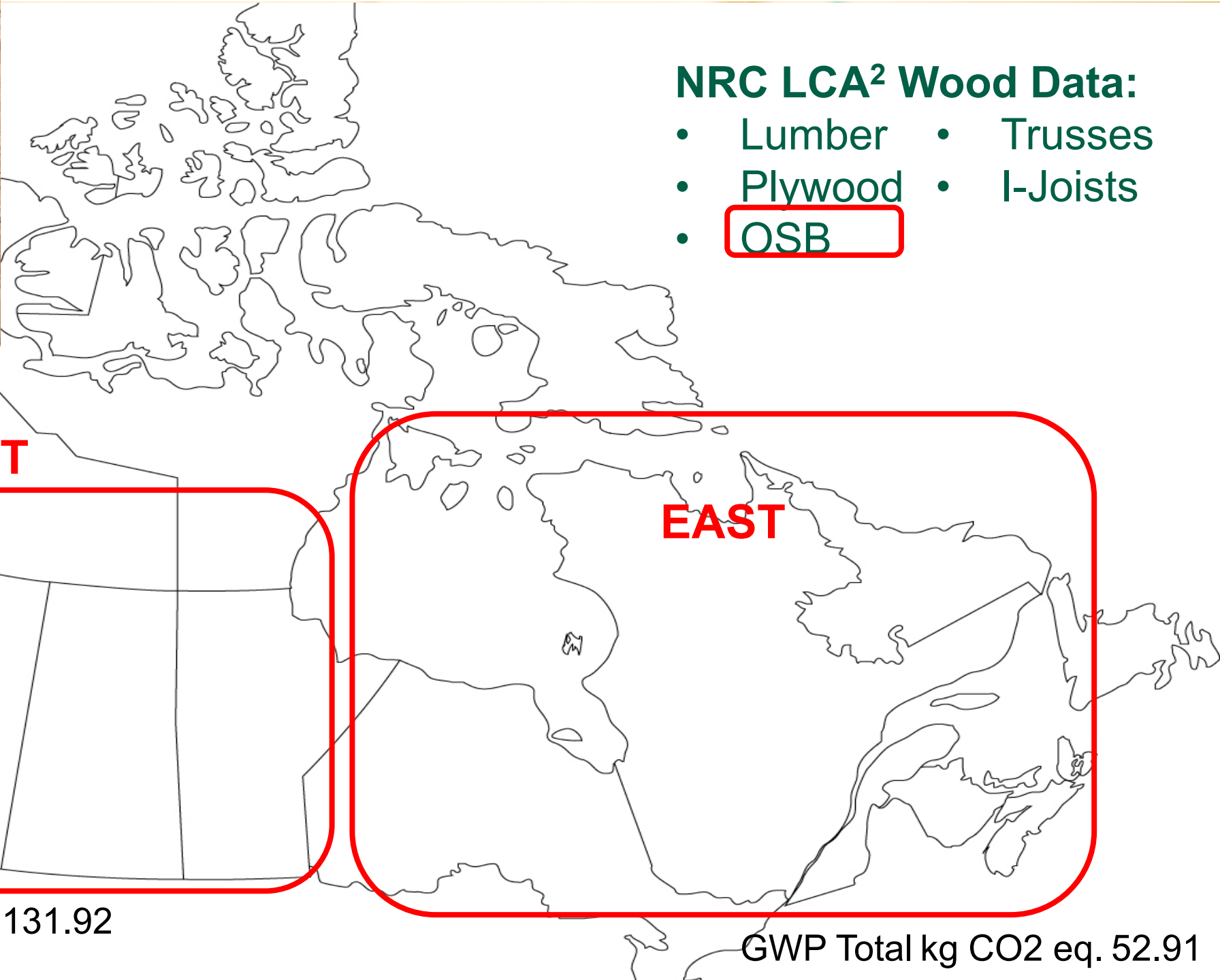


NRC LCA² Wood Data:

- Lumber
- **Plywood**
- OSB
- Trusses
- I-Joists



GWP Total kg CO₂ eq. 154.46



NRC LCA² Wood Data:

- Lumber
- Plywood
- **OSB**
- Trusses
- I-Joists

GWP Total kg CO₂ eq. 131.92

GWP Total kg CO₂ eq. 52.91



NRC LCA² Wood Data:

- Lumber
- **Trusses**
- Plywood
- I-Joists
- OSB

WEST

22 WWTB-BC

25 WWTB-AB

24 WWTB-SK&MB

EAST

21 MSBQ

39 OSWA

24 AWTFB

GWP Total kg CO₂ eq. 121.57

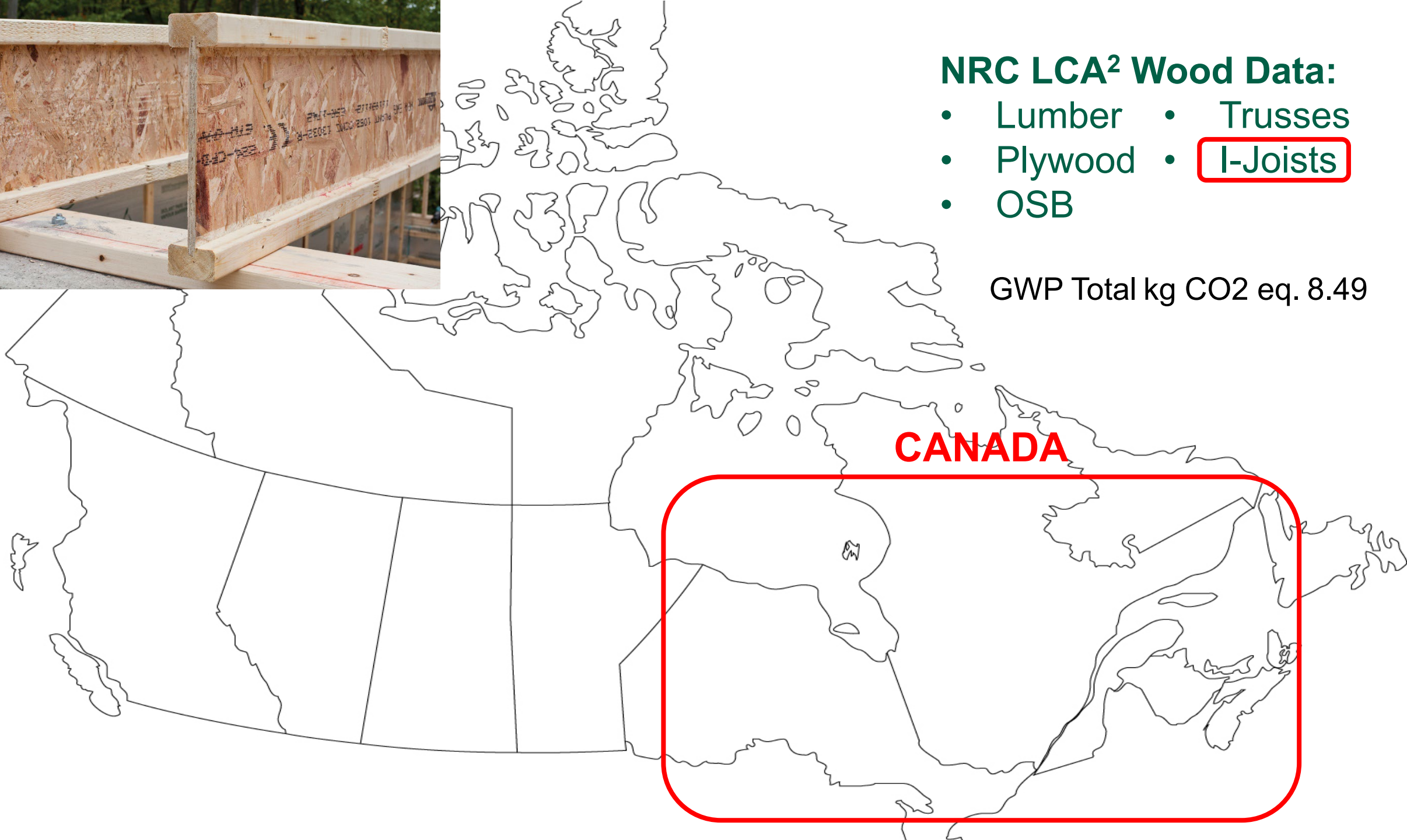
GWP Total kg CO₂ eq. 110.58



NRC LCA² Wood Data:

- Lumber
- Plywood
- OSB
- Trusses
- **I-Joists**

GWP Total kg CO₂ eq. 8.49



What's Next

- Create Environmental Product Declarations – Summer 2024
- Product Category Rules review opens July 2024
- Development of Transportation Module (A4) – Funding dependent
- Survey 2024

What is an EPD?

- Standardized document that provides quantified environmental data of a product
- Based on results of an LCA
- Valid for 5 years
- Types: Industry-Average, Product-Specific

ENVIRONMENTAL PRODUCT DECLARATION

NORTH AMERICAN SOFTWOOD LUMBER

AMERICAN WOOD COUNCIL
CANADIAN WOOD COUNCIL



The American Wood Council (AWC) and the Canadian Wood Council (CWC) are pleased to present this Environmental Product Declaration (EPD) for North American softwood lumber. The EPD includes Life Cycle Assessment (LCA) results for all processes up to the point that planned and dry lumber is packaged and ready for shipment at the manufacturing gate. The underlying LCA and the EPD were developed in compliance with ISO 14025:2006 and ISO 21930:2017 and have been verified under the UL Environment EPD program.

The AWC and CWC represent wood product manufacturers across North America. The North American forest product industry is a global leader of sustainably sourced wood products. This EPD reflects years of research and numerous sustainability initiatives on behalf of our members to continually improve the environmental footprint of North American wood products. We are pleased to present this document to show our progress.

Please follow our sustainability initiatives at www.awc.org and www.cwc.ca.



How are EPDs used?

- Product specifications
- Green procurement
- Embodied carbon/life cycle assessment regulations
- Informed decision-making

Environmental Product Declarations

How are EPDs used?

- Product specifications →
- Green procurement
- Embodied carbon/life cycle assessment regulations
- Informed decision-making

SECTION 06 10 00 – ROUGH CARPENTRY

SUBMITTALS (added language)

- A. **Environmental Product Declaration (EPD)**: Submit in accordance with the Specification Section for LEED Submittals, Section 013510.01.B.1– Environmental Product Declarations.
1. **Submit an EPD for each structural lumber type** specified in the Framing Lumber section of the structural general notes.
 2. Impact Categories:
 - a. Global Warming Potential (GWP): All GWP information submitted shall be in the form of kgCO₂eq/kg.
 - b. Ozone Depletion Potential (ODP): All ODP information submitted shall be in the form of kgCFC-11/kg.
 - c. Acidification Potential (AP): All AP information submitted shall be in the form of kgSO₂/kg.
 - d. Eutrophication Potential (EP): All EP information submitted shall be in the form of

Environmental Product Declarations

How are EPDs used?

- Product specifications
- Green procurement →
- Embodied carbon/life cycle assessment regulations
- Informed decision-making



Government
of Canada

Gouvernement
du Canada

Policy on Green Procurement



Government
of Canada

Gouvernement
du Canada

Standard on Embodied Carbon in Construction

Ready-mix concrete requirement:

- Disclose EPD
- Demonstrate 10% GHG reduction

Environmental Product Declarations

How are EPDs used?

- Product specifications
- Green procurement →
- Embodied carbon/life cycle assessment regulations
- Informed decision-making

Buy Clean California Act

(Public Contract Code Sections 3500-3505)

THE BUY CLEAN AND BUY FAIR WASHINGTON ACT

HB 1103 - 2021-22

Buy Clean Colorado Act

HB21-1303

Oregon Buy Clean Legislation

House Bill 4139

Minnesota's Buy Clean Buy Fair law

HF 2204 Status in the House for the 91st Legislature (2019 - 2020)

Environmental Product Declarations

How are EPDs used?

- Product specifications
- Green procurement
- Embodied carbon/life cycle assessment regulations
- Informed decision-making

TORONTO GREEN STANDARD v4

Low-Rise Residential

- Cradle-to-gate emissions (A1-A3)
- **Tier 2:** absolute limit $\leq 250 \text{ kgCO}_2\text{e/m}^2$

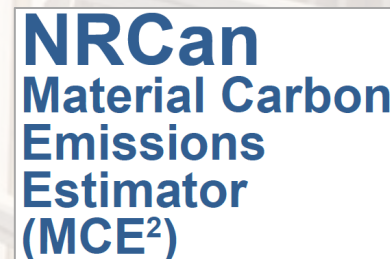
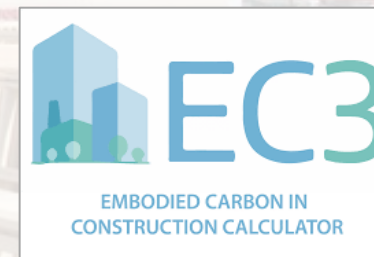
Mid to High-Rise Residential & Commercial

- Upfront emissions (A1-A5)
- **Tier 2:** absolute limit $\leq 350 \text{ kgCO}_2\text{e/m}^2$
 - Mandatory for city-owned buildings
- **Tier 3:** absolute limit $\leq 250 \text{ kgCO}_2\text{e/m}^2$
 - Enhanced city-owned buildings

Environmental Product Declarations

How are EPDs used?

- Product specifications
- Green procurement
- Embodied carbon/life cycle assessment regulations
- Informed decision-making →



Wood EPDs

- Existing North American EPDs expire in July 2025
- CWC will develop new regionally-specific EPDs
 - Lumber
 - Plywood
 - OSB
 - **NEW!** Trusses
 - I-Joists

ENVIRONMENTAL PRODUCT DECLARATION

NORTH AMERICAN SOFTWOOD LUMBER

AMERICAN WOOD COUNCIL
CANADIAN WOOD COUNCIL



The American Wood Council (AWC) and the Canadian Wood Council (CWC) are pleased to present this Environmental Product Declaration (EPD) for North American softwood lumber. The EPD includes Life Cycle Assessment (LCA)

	NA EPD	BC	Alberta	Ontario	Quebec	New Brunswick	Atlantic
GWP Total							
kg CO ₂ eq.	63.12	41.48	57.00	54.64	24.80	41.37	37.11

pleased to present this document to show our progress.
Please follow our sustainability initiatives at www.awc.org and www.cwc.ca.

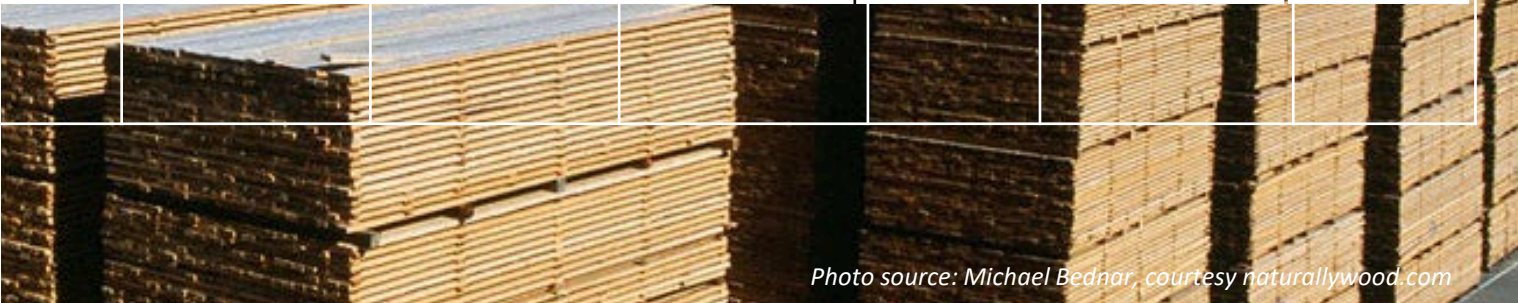
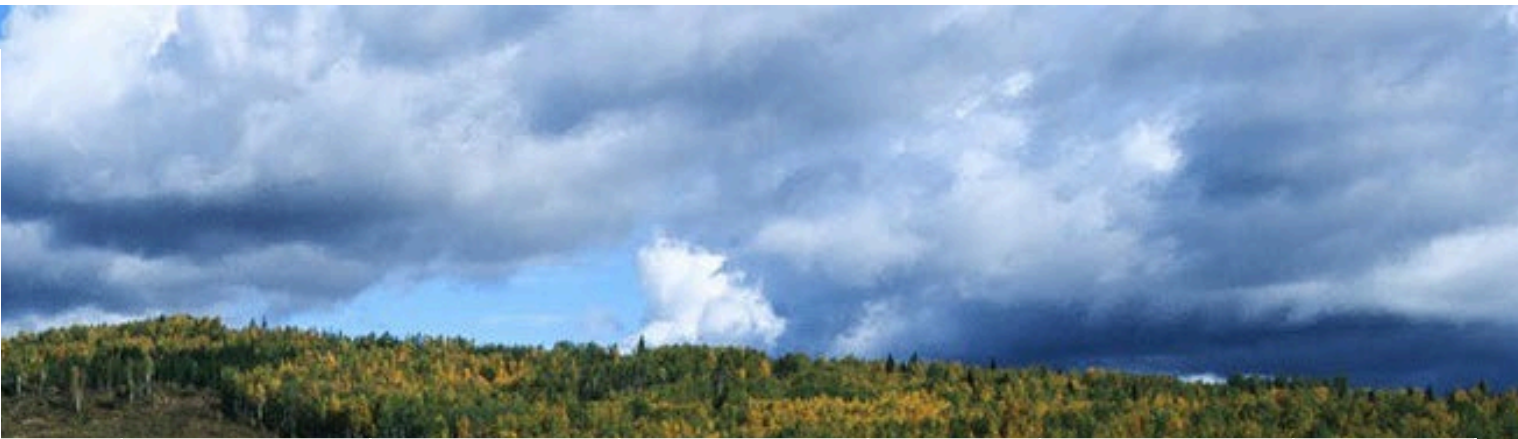
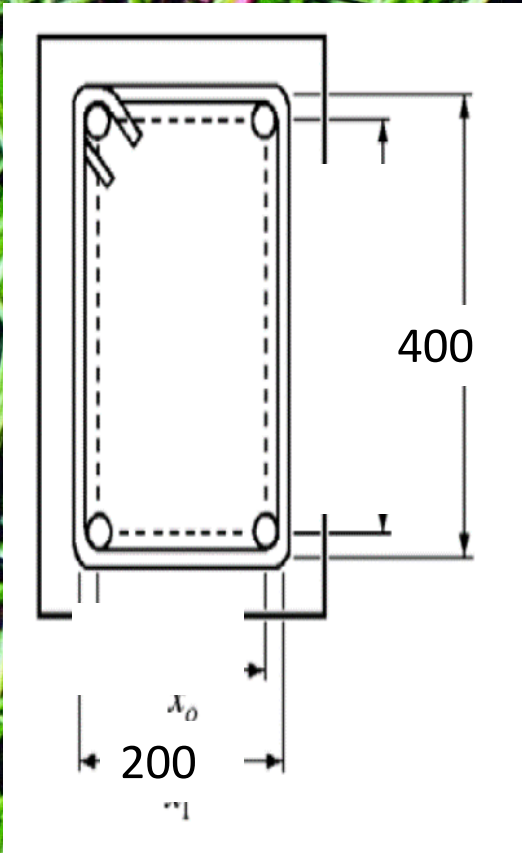


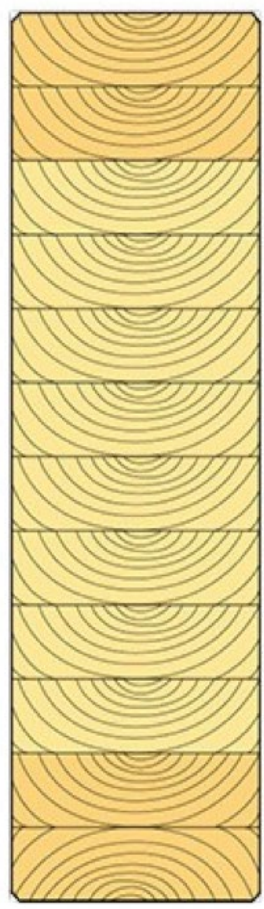
Photo source: Michael Bednar, courtesy naturallywood.com

Material Differences



125m

350



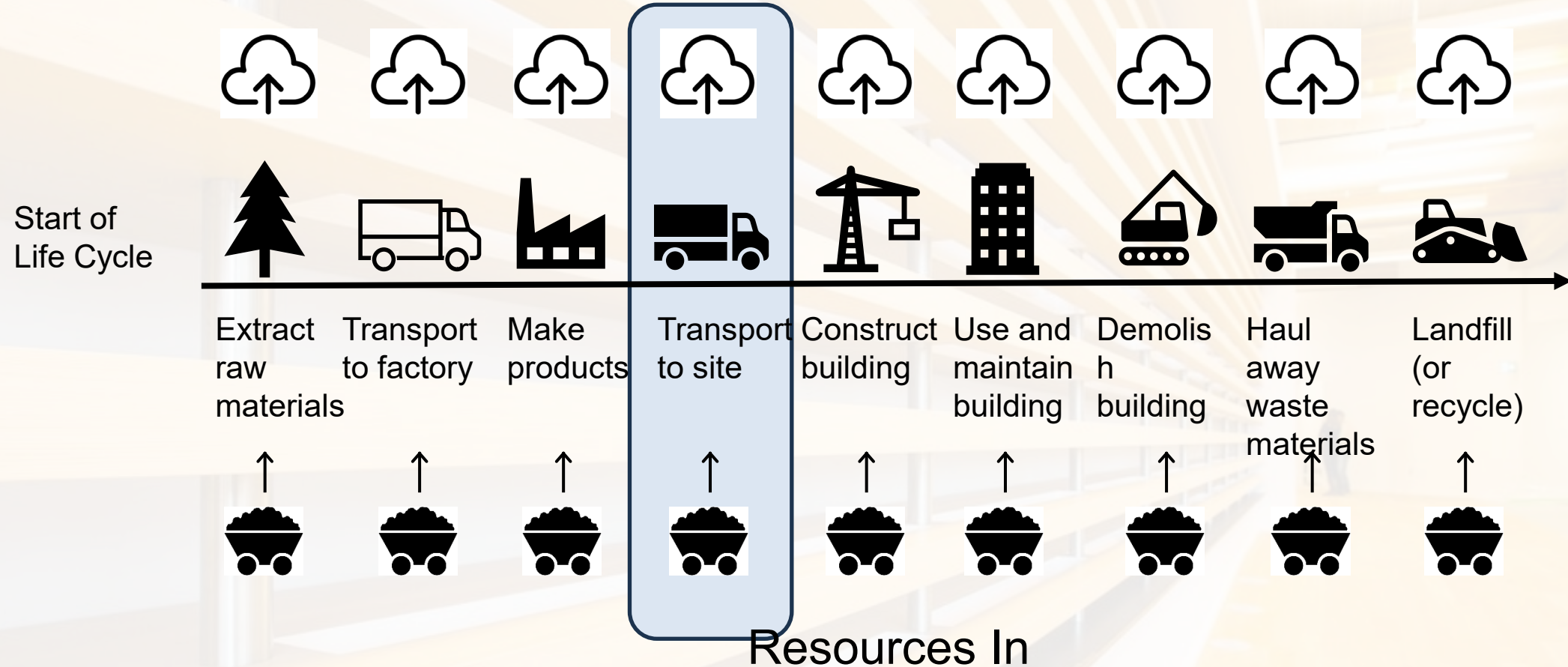
600

200

Material	Concrete	Steel	Timber
Volume @ 20'	17.8	.90	26.7
Mass (kg)	1211	206	400
GWP	1393	821	227

NRC LCA² Data Gathering

Emissions, Wastes, & Residues Out



- Current version of North American EPD for softwood lumber covers only A1-A3



Softwood Lumber A4 'Transport from Gate to Site'





Why is transportation relevant?

- Lumber sold in US will need transparency of transportation impact.
- Information gap in EPD and WBLCA software tools:
- Little good information about transportation from mill to project.
- Concerns about non-tariff trade barrier and re: Inflation Reduction Act \$\$\$
- Will Need to know regional volumes, distances to entry ports and modes of transport



Pacific Northwest (PNW)

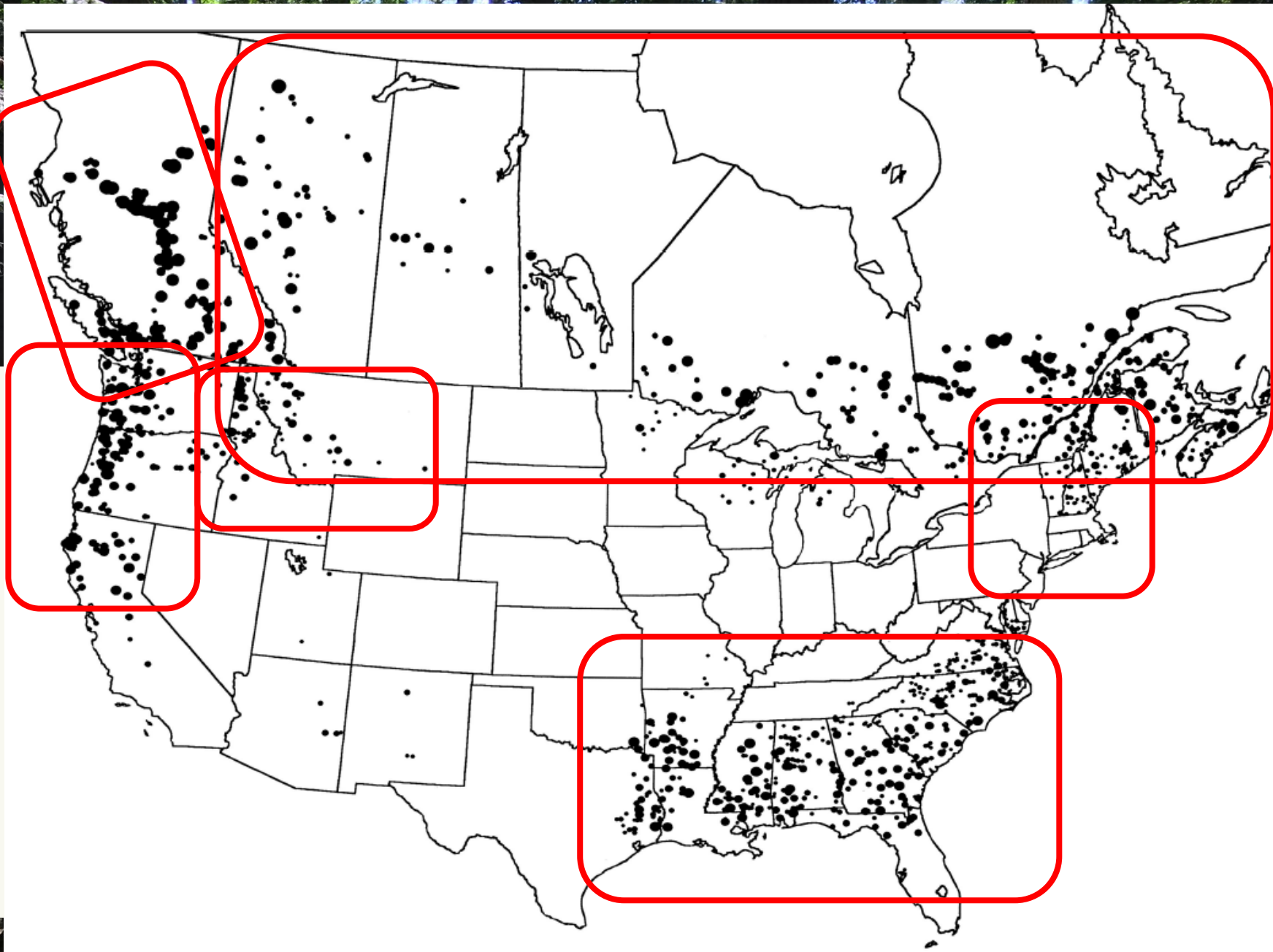
Inland Northwest (INW)

Southeast (SE)

Northeast (NE)

Canada; British Columbia (Canada-BC)

Canada; East of Rockies (Canada-ER)



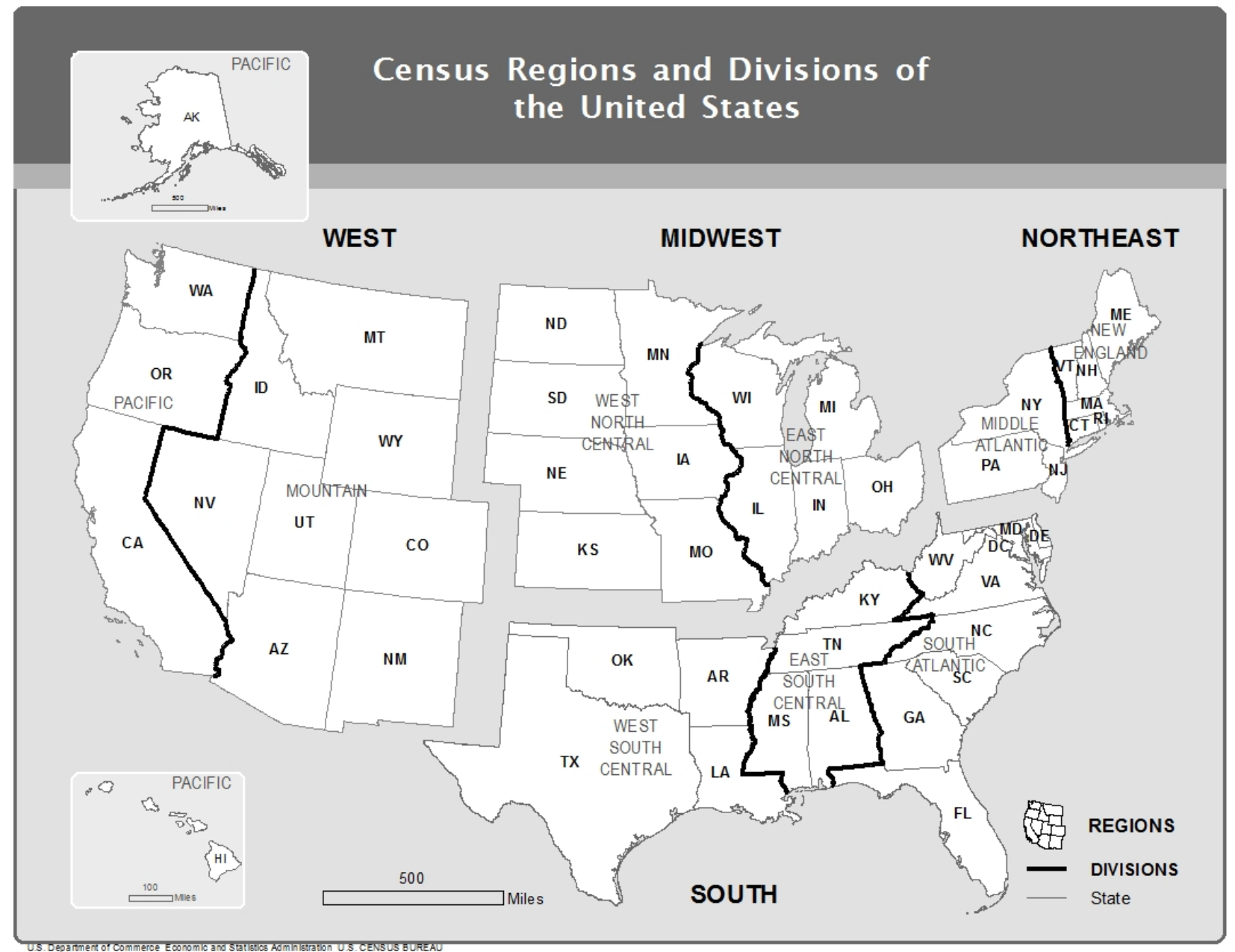


West

Midwest/North Central

Northeast

South



Consumption by production region

US Lumber Consumption by Production Region; 2015-2019

<u>Northeast</u>	<u>Average (2015-2019)</u>	
PNW	11%	
INW	4%	
SE	26%	
NE	7%	
Canada (BC)	18%	
Canada (ER)	33%	

Consumption by census region ***Average (2015-2019)***

Northeast	13%
North Central	20%
West	22%
South	45%



Origin & destination nodes

- Origin and destination nodes were developed based on discussions with economists, analysis of US freight railroad maps and GIS mapping of North American sawmill locations
- For each origin region and each destination region, two metropolitan locations were chosen in order to develop inter- and intra-region travel distances.



<u>Production Region</u>	<u>Origin A</u>	<u>Origin B</u>
Pacific Northwest (PNW)	<i>Longview, WA</i>	<i>Redding, CA</i>
Inland Northwest (INW)	<i>Spokane, WA</i>	<i>Great Falls, MT</i>
Southeast (SE)	<i>Jackson, MS</i>	<i>Columbia, SC</i>
Northeast (NE)	<i>Bangor, ME</i>	<i>Montpelier, VT</i>
Canada; British Columbia (Canada-BC)	<i>Prince George, BC</i>	<i>Vancouver, BC</i>
Canada; East of Rockies (Canada-ER)	<i>Montreal, QC</i>	<i>Thunder Bay, ON</i>
<u>Consumption Region</u>	<u>Destination A</u>	<u>Destination B</u>
Northeast (NE)	<i>New York, NY</i>	<i>Washington, DC</i>
North Central (NC)	<i>Chicago, IL</i>	<i>Kansas City, KS</i>
West (W)	<i>Los Angeles, CA</i>	<i>San Francisco, CA</i>
South (S)	<i>Houston, TX</i>	<i>Jacksonville, FL</i>





Transport distances

- Each production and consumption region resulted in four origin and destination pairs
- For each of the four origin/destination pairs, travel distances by truck and rail were calculated based on Google maps (truck travel) and the BNSF rail mileage calculator, with estimates required for rail travel on alternative rail networks



Carbon Thoughts Going Forward



- EPDs are not an option.
- Transportation impacts are important to Canada – also not an option for US Market.
- Canadian lumber GWP appears less than U.S.
- Need more data from Engineered Wood Mfrs.
- This is good for wood.

Why Wood?

- Carbon Sink
- Renewable
- Recyclable
- Reusable
- Organic
- Cleans Air
- Cleans Water
- Provides O₂
- Biodegradable
- Habitat Source



If Not Wood, *what?*

- Avoids CO₂
- Strong
- Lightweight
- Flexible
- Diverse
- Attractive
- Easy to Use
- Available
- Inexpensive
- Versatile

Questions?

If you have a question that you'd like to ask privately or have one that couldn't get answered, please feel free to email me directly.

pmoonen@cw.ca or pmoonen@wood-works.ca