AMERICAN WOOD COUNCIL

November 21, 2019

The Honorable Kathy Castor, Chair
The Honorable Garrett Graves, Ranking Member
House Select Committee on the Climate Crisis
H2-359 Ford Building
Washington, DC 20515

Dear Chairwoman Castor and Ranking Member Graves,

The American Wood Council (AWC) is pleased to provide comments to the House Select Committee on the Climate Crisis regarding the commitment and practices of the wood products industry in reducing greenhouse gas (GHG) emissions, as well as provide the Select Committee with guidance as to how wood products can be an integral part of the solution in reducing the carbon footprint of the built environment.

AWC is the voice of North American wood products manufacturing, an industry that provides almost 450,000 men and women in the United States with family-wage jobs, many in rural areas. AWC represents 86 percent of the structural wood products industry, and members make products that are essential to everyday life from a renewable resource that absorbs and sequesters carbon. AWC staff experts develop state-of-the-art engineering data, technology, and standards for wood products to assure their safe and efficient design, as well as provide information on wood design, green building, and environmental regulations. AWC also advocates for balanced government policies that affect wood products.

According to data from the United Nations Environment – Global Status Report 2018, the building sector is responsible for a full 39 percent of global energy-related carbon emissions.[1] While the majority of these emissions (approximately 28 percent) arise from the day-to-day operations of existing buildings, the other 11 percent comes directly from construction of new buildings. Wood products are a solution that can inherently lower the GHG impact from the built environment.

Sharing the benefits of sustainable wood products has been an innate priority for the wood products industry for the simple reason that wood is the only major building material that grows naturally, is renewable, uses a majority of carbon neutral biomass energy for production, and sequesters carbon. Beginning with North American certified sustainable forestry practices, wood products are then less energy-intensive to manufacture and result in a carbon-sequestering building product that can be repurposed at the completion of a building's life cycle.

Sustainable Forestry Practices and the Carbon Cycle

Modern North American forestry practices harvest wood in a sustainable way, supporting carbon sequestration in forest lands and in the wood products that are derived from them. According to

[1] Global Status Report 2018, United Nations Environment Program

the *State of America's Forest* report, only 1.3 percent of the total timber volume available for harvest was harvested in 2016, which was half the volume of net growth.[2] Responsible forest management in the U.S. has resulted in more than 50 consecutive years of forest growth that exceeds annual forest removals resulting in increasing levels of sequestered carbon.[3] Notably,

- North American sustainable forestry certification programs require that wood come from forests that are sustainably managed, which in addition to the replanting of trees, includes measures to protect water quality, biodiversity, wildlife habitat, and species at risk. This confirms wood as a renewable resource.[4]
- According to U.S. Department of Agriculture data, the total volume of trees growing in U.S. forests has increased 60 percent since 1953. The carbon stored in these forests has increased at a corresponding rate.[5]
- When older trees die and decay, they emit carbon back into the atmosphere, including emissions in the form of methane, a more potent greenhouse gas than carbon dioxide (CO_2). However, as trees are sustainably harvested and turned into wood products, they do not emit methane and they store (sequester) carbon for the life of the product. And, harvested trees in turn make room for reforestation so that new trees can be planted and commence sequestering carbon, thus continuing the carbon cycle.
- As forests grow, the trees absorb carbon dioxide (CO_2) from the atmosphere through photosynthesis and convert it into organic carbon that is stored as wood. Trees then return oxygen to the atmosphere. At a tree's death, the stored carbon is either released during decay, fire or through controlled energy production to complete the carbon cycle, or it continues to be stored when the tree is converted to a product.[6]
- When a tree is harvested, some carbon does stay in forest soil and some is released as roots, branches and leaves left behind begin to decompose. However, once the area is regenerated, the trees once again begin to absorb and store carbon.
- Wood products keep stored carbon out of the atmosphere until the end of product life, which could include repurposing of materials.[7]
- Using wood in place of fossil fuel-intensive building materials also "avoids" greenhouse gases that would have been emitted by those products during their manufacturing.[8]

Working forests are essential to the carbon sequestration, and the best way to keep working forests working is to expand markets for wood products. Strong markets for wood products give landowners incentive to keep lands forested, thereby avoiding encroachment of development, and ensuring a positive return on the land investment over the long term. Vibrant markets

[2] The State of America's Forests. U.S. Endowment for Forestry and Communities. Accessed November 21, 2019. https://usforests.maps.arcgis.com/apps/MapJournal/index.html?appid=ec04704969514f20b1eb63280275c34c
[3] Sustainable Forestry in North America, Woodworks.org
[4] SFI 2015-2019 Standards and Rules
[5] Forest Resources of the United States, 2017
[6] Forests, Carbon and Climate Change; Chapter Seven: Using Wood Products to Reduce Global Warming, Corrim
[7] Reusewood.org
[8] https://www.nrs.fs.fed.us/niacs/forests/carbonsequestration/. Also see: Evaluating the Carbon Footprint of Wood Buildings, ThinkWood

provide the income necessary not only to keep lands forested but to invest in additional forest management techniques that improve forest health.[9]

Wood Products as Sustainable Building Products

A March 2017 NERA report[10] that was sponsored by the American Council for Capital Formation states that consumption of fossil fuels and carbon emissions from the wood products sector are less than 1 percent of total industrial energy consumption and carbon emissions. Given its output value, the sector is the least energy and carbon intensive of the entire manufacturing sub-sectors. Conversely the report identifies other building materials that historically have been among the most energy intensive, at almost 10 times that of the average intensity of all sectors.[11]

With respect to the significant carbon contribution of non-wood building materials, academia as well as the press have reported on this consistently.[12,13] Contrast this with a report from the Forest Climate Working Group, a coalition that collaborates on forest carbon strategy and policy recommendations, indicating the current inventory of wood structures in the U.S. is estimated to hold 1.5 billion metric tons of carbon, equivalent to 5.4 billion tons of CO_2 kept out of the atmosphere.

Recent advances in wood products technology has also resulted in the advent of mass timber, a wood product that stores even more carbon than traditional wood products per square foot of construction. Recent approvals allowing construction of mass timber buildings up to 18 stories will further avoid the use of fossil intensive products and greatly increase the carbon stock in the built environment. Language providing research and development support for expanding and accelerating the use of mass timber was included in the 2018 Farm Bill.

It is estimated that increasing wood use to the maximum extent feasible in multi-family housing, low-rise non-residential construction, and remodeling could result in a carbon benefit equal to about 21 million metric tons of CO_2 annually – the equivalent of taking 4.4 million cars off the road indefinitely."[14]

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[9] Historical Perspective on the Relationship between Demand and Forest Productivity in the US South. Forest2Market. July 2017. https://www.forest2market.com/hubfs/2016_Website/Documents/20170726_Forest2Market_Historical_Perspective_US_South_At_a_Glance.pdf

[10] Impacts of Greenhouse Gas Regulations on the Industrial Sector. March 22, 2017. Page 68. https://www.nera.com/publications/archive/2017/impacts-of-greenhouse-gas-regulations-on-the-industrial-sector.html

[11] Ibid at page 19.

[12] "The coming concrete crisis." The Globe and Mail. August 24, 2018.

[13] "Climate change: The massive CO_2 emitter you may not know about." BBC News. December 17, 2018.

[14] Evaluating the Carbon Footprint of Wood Buildings. Think Wood CEU. April 2015.

Manufacturing

Significantly, and as noted earlier, manufacturing wood products requires far less energy than other construction materials, produces much less GHG emissions, and most of the energy used for wood products manufacturing comes from renewable biomass.

Most wood products manufacturers use biomass from manufacturing and sustainable forestry operations residuals to produce energy, providing significant carbon-reducing benefits to the environment. For AWC member companies, on average, over 75 percent of their energy use comes from biomass derived from manufacturing residuals. And, using manufacturing residuals further captures the inherent energy that would otherwise be lost to the atmosphere if these residuals were allowed to decay or be landfilled, thereby avoiding methane emissions while at the same time displacing fossil fuel use with its significantly higher GHG emissions.[15] These carbon benefits are perpetuated while forests remain, as they do in North America, abundant and well managed.[16]

Wood in the Built Environment

As highlighted above, *when a tree is utilized for wood products, its ability to sequester carbon is extended*, and the carbon is not released until the product burns or decomposes. A widely cited study in the *Journal of Sustainable Forestry* held that substituting wood for other materials used in buildings and bridges could prevent 14 to 31 percent of global carbon emissions.[17]

Further, as the green building movement has evolved beyond its initial emphasis on operational energy efficiency, greater attention has been given to the choice of building materials and environmental impacts. And, as buildings become more energy efficient, more and more attention is being paid to the other aspect of a building's carbon footprint such as embodied energy. Between now and 2060, the building industry is poised to add 2.48 trillion square feet of new construction worldwide, doubling the amount of buildings we currently have on the planet over the next four decades. This is equivalent to constructing an entire New York City every month for the next 40 years.[18] Embodied carbon will be responsible for almost half of total new construction emissions between now and 2050.[9] Using Life Cycle Assessment (LCA), the environmental impacts associated with construction materials used can be calculated over a building's lifespan.

To ensure that the environmental footprint of the wood industry's products is available for widespread use, AWC has developed 12 environmental product declarations (EPDs) of North American wood products. These EPDs have been subject to third party peer-review and

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[15] Sustainability Facts, AWC.org/sustainability/facts

[16] Biomass Carbon Neutrality, AWC.org/publicpolicy/biomass

[17] Chadwick Dearing Oliver, Nedal T. Nassar, Bruce R. Lippke & James B. McCarter (2014) Carbon, Fossil Fuel, and Biodiversity Mitigation With Wood and Forests, Journal of Sustainable Forestry, 33:3, 248-275

[18] New Buildings: Operational Emissions, Architecture2030

verification to ensure their validity.[19] Additionally, WoodWorks has developed a calculator to quantify carbon emissions from construction: https://www.woodworks.org/design-and-tools/design-tools/online-calculators/.

Wood Products and Resiliency

The concept of resilience — the ability to withstand and recover — is not new, but the focus on resiliency is growing as a result of the increasing impacts on U.S. consumers. For the built environment, techniques to improve resilience have evolved over time and vary based on factors such as natural or man-made type of hazard, building occupancy, building importance, building location, and whether construction is new or existing. Construction to address existing or anticipated hazards (e.g., wind, seismic, and flood) has resulted in robust building design now becoming of much greater importance to reduce damage associated with hazards.

A report from the National Association of Home Builders found that homes, most of which are constructed with wood products, and built to recent building codes, better withstood the effects of hurricanes.

> *Homes built before 2003 in Texas and 2008 in Florida, and therefore built to older codes, sustained more damage than newer homes. However, very few homes constructed after 2003 in Texas or after 2008 in Florida suffered severe damage to roof sheathing, wall sheathing and framing or total loss and collapse of those components. The* [International Residential Code's] *structural provisions ensure that the integrity of the roof framing and sheathing is maintained, and that wall structure and sheathing damage is minimized.*[20]

Additionally, some building materials may use "durability" as an attribute to claim resiliency. A survey of buildings demolished in the Minneapolis-St. Paul area found that wood buildings were typically the oldest. The majority of wood buildings were older than 75 years, but more than half the buildings constructed of other materials were just 26 to 50 years-old when demolished. Overall, the fact that wood buildings had the longest lifespan shows that wood structural systems are fully capable of meeting a building's longevity expectations.[21]

Biomass Energy

U.S. government agencies also should, as in most other countries, maintain the recognition of biomass as carbon neutral. The use of biomass for energy lessens dependence on fossil fuels, which release carbon into the atmosphere without a way to capture and recycle it. Congress has passed legislation to provide regulatory certainty regarding the carbon neutrality of forest-

[19] Environmental Product Declarations (EPDs) for Wood, AWC.org

[20] Modern Building Codes Boost Resiliency. Builder Magazine. Sept. 17, 2019.

[21] *Survey on Actual Service Lives for North American Buildings,* FPInnovations, Proceedings, 10th International Conference on Durability of Building Materials and Components, 2005

derived biomass, and in April 2018, EPA issued a policy to treat biogenic carbon dioxide (CO_2) emissions from the combustion of forest biomass at stationary sources as carbon neutral.[22]

Despite attacks from organizations seeking to use biomass as a surrogate for their own anti-forestry goals, the GHG benefits of biomass harvested from sustainably managed forests has been recognized repeatedly by an abundance of studies, agencies, institutions, legislation and rules around the world, including guidance from the United Nations (UN) Intergovernmental Panel on Climate Change and the reporting protocols of the UN Framework Convention on Climate Change.

Summary

As governments and the private sector seek to improve the environmental performance of buildings and reduce their carbon footprint, there is growing recognition that using wood from responsibly managed forests is part of the solution. Wood is a material principally manufactured using carbon-neutral biomass energy and having the unique characteristic of sequestering carbon for the life of the structure. As a result, greater use of wood in construction can contribute to reducing greenhouse gas emissions and help meet sustainability and energy efficiency goals in building projects.

Sincerely,

Robert Glowinski
President & CEO

[22] Biomass Carbon Neutrality, AWC.org