



**USDA-FS Symposium: Build It Back Better with Wood:
Connecting Urban & Rural Communities with Innovation**

April 17 and 18, 2024, 12:15 pm to 4:30 pm EDT, each day

ORGANIZERS:

United States Department of Agriculture - Forestry Services (USDA-FS)

NSF- IUCRC- Center for Integration of Composites into Infrastructure (CICI)

WVU - Constructed Facilities Center (CFC)

WVU - Department of Civil and Environmental Engineering

WVU - Division of Forestry and Natural Resources

Louisiana Transportation Research Center (LTRC)

Journal “Sustainable Structures” (SuSt)

Hybrid Pre-Symposium Roundtable Session
Date and Time: April 17, 10 am to Noon, EDT

INVITED ATTENDEES: All steering committee members and presenters are invited.

IN-PERSON LOCATION: Board Room #203, The Erickson Alumni Center, 1 Alumni Dr, Morgantown, WV 26506

GOAL: Develop action items with innovations in wood products to bridge rural-urban divide:

- Utilization of wood waste and discarded wood
- Upgrade low quality wood to higher grades
- New applications & new construction technologies
- In-situ retrofit/rehab with polymer composites,
- Others, e.g. natural fiber composites

SCHEDULE:

9:30 am	Registration Viewing Exhibition of Innovative Products and Research Posters	Lobby, Alumni center
10:00 am	Roundtable Forum: Path forward with innovations in wood products	Board room #203, Alumni Center
11:30 am	Working Lunch	Board room #203, Alumni Center
12:15 pm	Proceed to Online Symposium	Board room #203, Alumni Center

REMOTE PARTICIPATION VIA ZOOM:

Date & Time	Apr 17, 2024 10:00 am EDT (US and Canada)
Meeting ID	961 9953 5762
Passcode	2024usda
Registration and Joining URL Link	https://wvu.zoom.us/j/96199535762
Or Scan QR Code (Same as Online Symposium Link)	

**USDA-FS Symposium: Build It Back Better with Wood:
Connecting Urban & Rural Communities with Innovation
Online Symposium Sessions**

Date & Time	Apr 17, 2024 12:15 PM EDT (US and Canada)
	Apr 18, 2024 12:15 PM EDT (US and Canada)
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1. MISSION STATEMENT

“Build It Back Better with Wood: Connecting Urban and Rural Communities with Innovation” Symposium:

- **Promote innovation, knowledge exchange and collaboration**
- **Promote higher technical and commercial interaction between urban and rural communities**
- **Promote value-added utilization of all wood species, especially under-utilized hard wood species and their by-products for economic growth**
- **Explore the potential of wood products in infrastructure applications, energy savings, carbon sequestration, waste reduction and management**

- **Innovative applications for wood include transparent wood in lieu of glass for energy saving windows, wood frames for solar panels, soft and hard wood as core materials for FRP sandwich structural slab, beam, column, and wall panels in lieu of balsa wood, wood composites utilizing low-quality wood using high pressure infusion process, and use of nanocellulose for packaging applications**
 - **Inspire individuals and organizations to leverage the power of wood, foster R&D advancements, and empower communities towards a more sustainable future with wood as a method of natural CO2 sequestration**
- 2. NUMBER OF PARTICIPANTS. 200 participants online to maximize the impact, including international attendees.**
- 3. WHO SHOULD ATTEND? The targeted audience will include the following diverse group of stakeholders interested in various aspects of wood products and their role in sustainable and community development.**
- **Researchers and Academicians involved in forestry, wood science, architecture, and engineering who seek to exchange knowledge and collaborate on wood-related innovations.**
 - **Industry Professionals from the forestry, wood processing, and construction industries interested in value-added utilization of wood products.**
 - **Government and Policy Makers involved in developing policies related to sustainable construction, energy efficiency, and environmental conservation.**
 - **Community Leaders looking to empower their communities through sustainable practices and economic growth related to wood product manufacturing and assemblage.**
 - **General Public interested in learning more about the potential of wood products in building a sustainable future, including those concerned with carbon sequestration and sustainable, building materials with low embodied carbon emission.**
- 4. REGISTRATION: Free with registration of name, affiliation, and email.**

5. PROGRAM SCHEDULE:

Session, Time	Theme, Title	Chair, Lead, Speaker
April 17, 2024, from 12:15pm to 4:30pm EDT		
Session 1		

12:15 PM - 1:15 PM	Opening session	Moderator: Fred King, WVU VP for Research
	Objectives: 3 keynotes (general & technical), Conference objectives, research and development needs	
2 minutes	Welcome remarks	Fred King
5 minutes	Opening remarks	Senator Shelley Moore Capito
15 minutes	WVDA-FS Perspective	WVDA Commissioner Kent Leonhardt
15 minutes	USDA -FS Perspective	Brain Brashaw
15 minutes	Industry/community Perspective	Cindy Squires
8 minutes	Q & A	All Speakers of This Session
1:15 PM - 2:15 PM	Theme 1 - Current trends for Engineered Wood Products	Moderator: Hota Gangarao
	Objectives: Current trends for Engineered Wood Products — Dwellings, Medium-rise Buildings & Bridges, Hydro systems, Others	
15 minutes	Urban Housing and Buildings with modular sub-system fabrication in factories of rural areas	Mike Blanford
15 minutes	The state-of-the-art review of bridge applications: New construction, rehabilitation, and retrofit (Timber piles, super structures, trestles)	Hota Gangarao Radhey Sharma
15 minutes	Hydraulic systems (Wicket gates, miter gates, boardwalks, retaining structures): Past and Present	Eric Johnson
15 minutes	Q & A	All Speakers of This Session
15 minutes	BREAK	
Session 2		
2:30 PM – 3:30 PM	Theme 2 - Wood sciences education in the US	Moderator: Gloria Oporto

	Objectives: Wood sciences education in the US – Traditional and non-traditional wood utilization – Urban and Rural wood-based infrastructure	
15 minutes	Wood science education to prepare rural workforce to adopt innovations and develop value-added products for urban utilization	Gloria Oporto
15 minutes	WoodWorks: Changing the Way People Build with Sustainable, Value-Added Mass Timber	Jason Reynolds
15 minutes	Structural engineering perspective: Product development in rural areas and urban implementation	PV Vijay and V Gopu
15 minutes	Q & A	All Speakers of This Session
3:30 PM - 4:30 PM	Theme 3 - Wood upgrade including high-pressure resin infusion, FRP reinforcement and ease of upgrade at low initial cost for rural affordability	Moderator: Rakesh Gupta
	Objectives: Wood update including high-pressure resin infusion for improved utilization, strength/stiffness, durability, thermo-mechanical upgrades, hybridization, and resistance to fungus, termites, and fire	
15 minutes	Properties and limitations of common species with focus on structural applications that are amenable for infusion	Doug Gardner
15 minutes	Materials science and engineering: how to upgrade low grade wood properties with infusion and help rural wood industry	Rakesh Gupta Hota Gangarao
15 minutes	Enhancing timber performance and durability with FRP wraps and reinforcements	Ray Liang
15 minutes	Q & A	All Speakers of This Session
April 18, 2024, from 12:15pm to 4:30pm EDT		
Session 3		
12:15 PM - 1:15 PM	Theme 4 – Value added utilization of Eastern species for structural applications	Moderator: Doug Gardner
	Objectives: Opportunities for Eastern species in structural applications, connecting urban and rural development opportunities	
15 minutes	Hardwood Species and Product Markets	Matt Bumgardner

15 minutes	Wood species that grow faster & in bulk for subsystem manufacturing of CLT using compression molding	Joe McNeel
15 minutes	What is the Future of Workforce Development for Construction and Industrialized Off-site Construction?	Sarah Lyon-Hill
15 minutes	Q & A	All Speakers of This Session
1:15 PM - 2:15 PM	Theme 5 - Wood resource management	Moderator: Karl Englund
	Objectives: Wood resource management, utilization of low-quality and insect-damaged timbers, economic development and training in underserved forest-based communities	
15 minutes	Improving Hardwood Forest Health and Sustainability Through Wood Utilization – A Federal Perspective	Charles Becker
15 minutes	Resource management- Industry view	Beryl Beagle
15 minutes	Resource management- University Perspective	Karl Englund Joe McNeel
15 minutes	Q & A	All Speakers of This Session
15 minutes	BREAK	
Session 4		
2:30 PM - 3:30 PM	Theme 6 - Expanding structural applications of Eastern wood species	Moderator: V Gopu
	Objectives: Enhancing Eastern wood species as a structural material, research, and outreach plan for the next 5 years	
15 minutes	Wood as engineered structural materials R&D	Marco LoRicca
15 minutes	Implementation of wood composites into transportation structures	V Gopu
15 minutes	Eastern Hardwoods as a Structural Raw Material (Weyerhaeuser perspective)	Gene Shutler

15 minutes	Q & A	All Speakers of This Session
3:30 PM - 4:30 PM	Conclusions and Pathway to a More Sustainable Future in Urban and Rural Communities (action items)	Moderator: Radhey Sharma
	Objectives: Prioritizing objectives, emphasizing connections between urban and rural development opportunities, and the development steps required for using low-grade and underutilized timber for value-added wood products	
30 minutes	Summary of each theme discussions	Chairs of above sessions
15 minutes	Recap of challenges and opportunities	Lew McCreery
15 minutes	Prioritization of future initiatives and wrap up	Patrick Rappold

6. MORE ABOUT SPEAKERS AND PRESENTERS

Name	Affiliation and Title
Beryl Beagle	Regional Procurement Manager, Stella-Jones Corporation, 9223 Maury River Road, Goshen, VA, bbeagle@stella-jones.com
Charles Becker	Wood Innovations Specialist, USDA- Forest Service, Wood Innovations, One Gifford Pinchot Drive, Madison, WI, charles.becker@usda.gov,
Mike Blanford	Research Engineer, Affordable Housing Research and Technology Division, Office of Policy Development and Research, michael.d.blanford@hud.gov
Brain Brashaw	Assistant Director, Forest Service State, Private & Tribal Forestry Cooperative Forestry, Wood Innovations, brian.k.brashaw@usda.gov
Matt Bumgardner	Research Forest Products Technologist, Forest Service, Northern Research Station, 359 Main Road, Delaware, OH, matthew.bumgardner@usda.gov
Karl Englund	Research Professor, Composite Materials & Engineering Center (CMEC), Washington State University, englund@wsu.edu

Hota Gangarao	Professor and Director, Department of Civil and Environmental Engineering, West Virginia University, Morgantown, WV Hota.Gangarao@mail.wvu.edu
Doug Gardner	Professor of Sustainable Materials Technology, School of Forest Resources and Advanced Structures and Composites Center, Nutting Hall Orono, ME, douglasg@maine.edu
V Gopu	Associate Director, External Programs, Louisiana Transportation Research Center (LTRC), Distinguished Professor, UL-Lafayette, 4101 Gourrier Avenue, Baton Rouge, LA, v.gopu@la.gov
Rakesh Gupta	Professor, Department of Chemical and Biomedical Engineering, West Virginia University, Morgantown, WV, Rakesh.Gupta@mail.wvu.edu
Eric Johnson	Technical Manager at US Army Corps of Engineers, Eric.O.Johnson@usace.army.mil
Fred King	Professor and VP for Research, West Virginia University, Morgantown, WV, Fred.King@mail.wvu.edu
Kent Leonhardt	WVDA Commissioner
Ray Liang	Research Engineer and Managing Director, NSF Center for Integration of Composites into Infrastructure, West Virginia University, Morgantown, WV, rliang@wvu.edu
Marco LoRicco	Research General Engineer, Forest Service, Forest Products Laboratory, One Gifford Pinchot Drive, Madison, WI, marco.loricco@usda.gov
Sarah Lyon-Hill	Director of Research Development, Center for Economic and Community Engagement, Virginia Tech, sarahlh@vt.edu
Lew McCreery	Forest Products Technologist, Forest Health and Forest Markets, USDA - Forest Service, 180 Canfield St., Morgantown, WV, Lew.McCreery@usda.gov
Joseph F McNeel	Professor & Director , Appalachian Hardwood Center, West Virginia University, jmcneel@wvu.edu
Gloria Oporto	Associate Professor, Wood Science and Technology, West Virginia University, Morgantown, WV, gloria.oporto@mail.wvu.edu
Patrick Rappold	Regional Wood Utilization Specialist, USDA-Forest Service, 626 East Wisconsin Avenue, Milwaukee, WI, patrick.rappold@usda.gov

Jason Reynolds	Jason Reynolds, MBA, DBIA, Senior Director, Eastern Division, WoodWorks – Wood Products Council, Greensboro, North Carolina, jason.reynolds@woodworks.org
Radhey Sharma	Professor, Department of Civil and Environmental Engineering, West Virginia University, Morgantown, WV, Radhey.Sharma@mail.wvu.edu
Senator Shelley Moore Capito	US Senator, West Virginia
Gene Shutler	WV Area Raw Materials Manager, Buckhannon Mill, Engineered Wood Product Facilities, Weyerhaeuser Corp. , Buckhannon, WV, Gene.Shutler@weyerhaeuser.com
Cindy Squires	President and CEO, American Composites Manufacturers Association (ACMA) and Former executive director/CEO of the International Wood Products Association, csquires@acmanet.org
PV Vijay	Professor, Department of Civil and Environmental Engineering, West Virginia University, Morgantown, WV, P.Vijay@mail.wvu.edu
Borjen Yeh	Director, Technical Services Division, APA, 7011 South 19th Street, Tacoma, WA, borjen.veh@apawood.org

7. STEERING COMMITTEE MEMBERS AND THEIR PRIMARY ROLES

Name	Affiliation	Role and Responsibility
Cindy Squires	ACMA	Chair, Steering Committee
Charles Becker	USDA-DC	Co-Chair, Steering Committee
Beryl Beagle	Stella Jones	Marketing and Promotion, Chair
Mike Blanford	HUD	Editor of Special Issue, Sustainable Structures Journal
Karl Englund	Washington State U	Presentation Selection, co-Chair
Doug Gardner	U of Maine	Program Development, Chair

V Gopu	LTRC	Logistics and IT Support through LTRC
GangaRao Hota	WVU	Presentation Selection, Chair
Ray Liang	WVU	Coordinator, Steering Committee; co-Editor of Special Issue, Sustainable Structures Journal
Marco LoRiccio	USDA-FPL	Speaker Coordination Chair
Lew McCreery	USDA-FS	Program Development Input
Gloria Oporto	WVU	Education Session Chair
Patrick Rappold	USDA-FS	Program Development Input
Radhey Sharma	WVU	Evaluation and feedback, Symposium's effectiveness assessment
Borjen Yeh	APA	Marketing and Promotion, co-Chair

8. DELIVERABLES AND OUTCOMES

- **A special issue in Journal Sustainable Structures.**
- **The proceedings of the symposium.**
- **Online collection of the presentation videos.**
- **A position paper summarizing the challenges and opportunities, prioritization of future initiatives and action items.**

9. POINT OF CONTACT

- **Dr. Ray Liang, email: rliang@wvu.edu, phone: 304 293 9348**