

REFORGE

MICHIGAN

Mark Rudnicki, Ph.D.

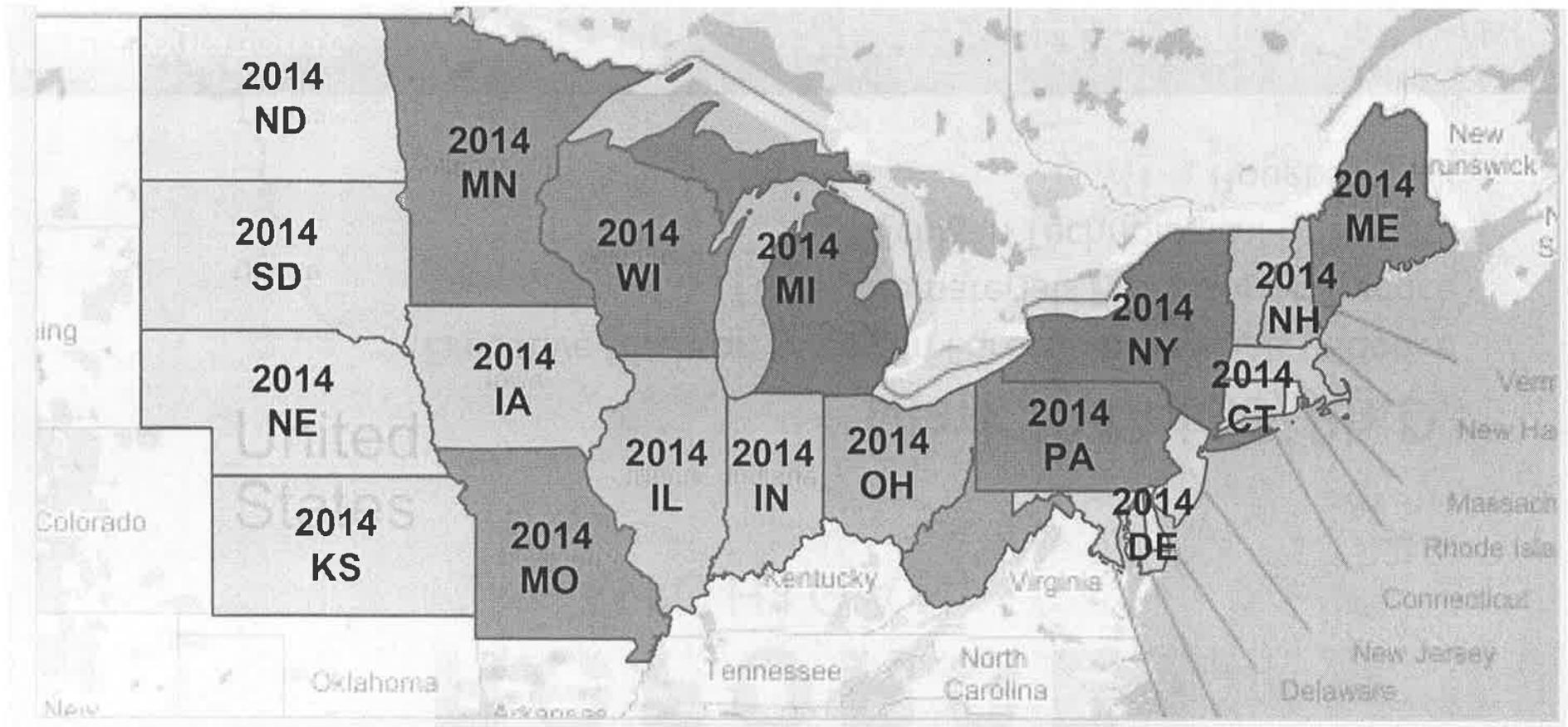
Executive Director, Michigan Forest Biomaterials Initiative
Forest Biomaterials Professor of Practice
Michigan Technological University
Houghton, MI

Presentation to:

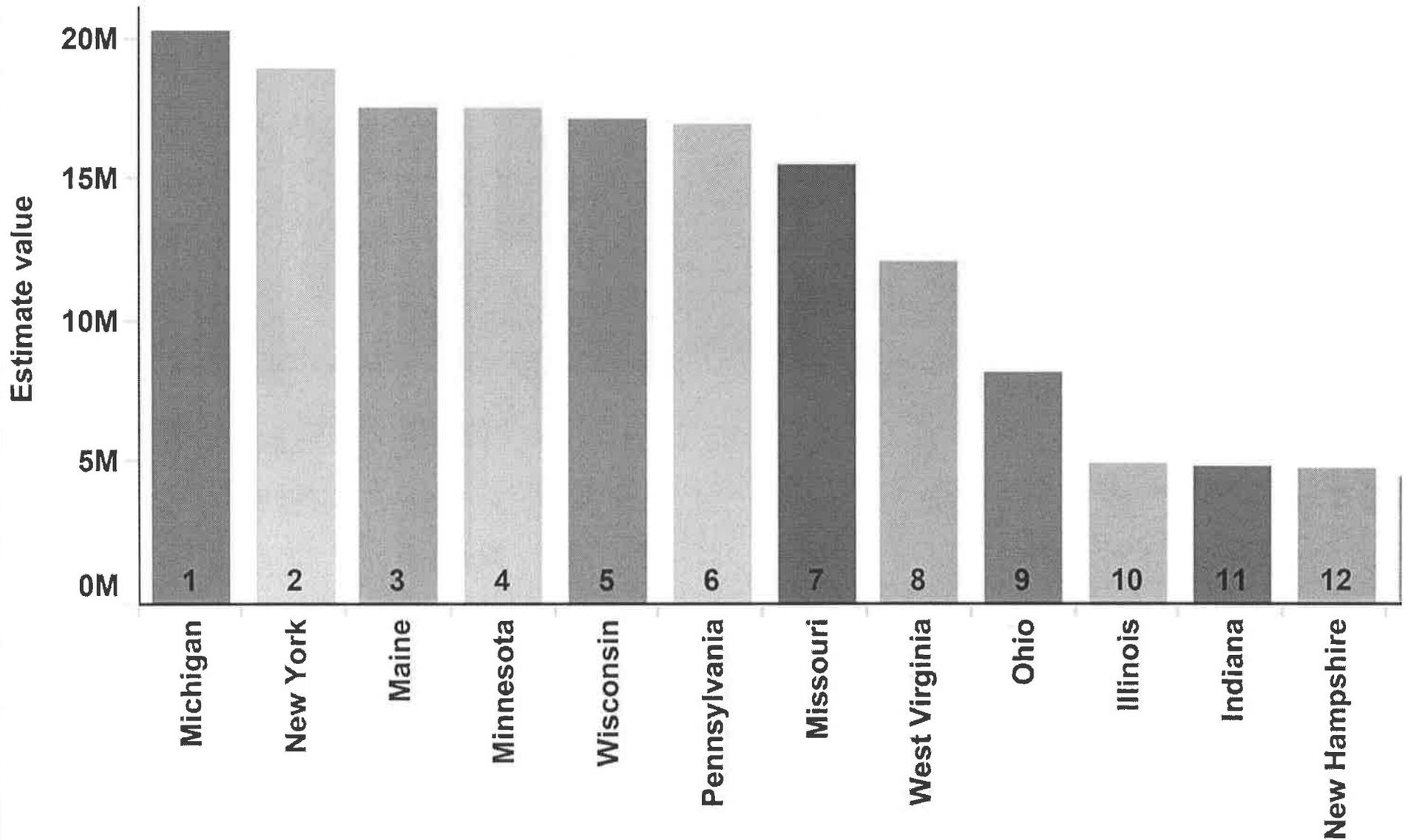
Senate Natural Resources Committee

Wednesday, October 21, 2015

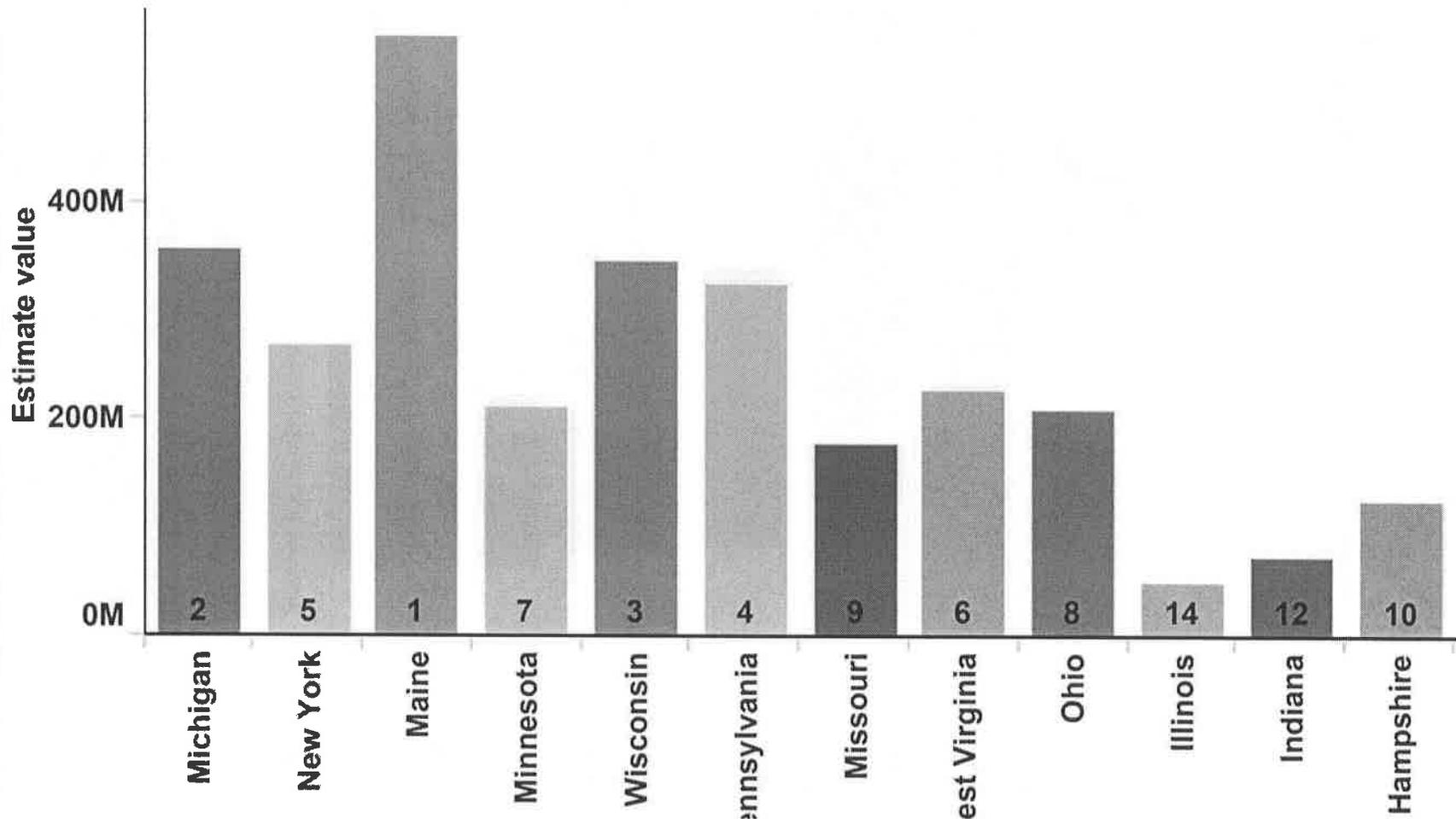
Northern Forest

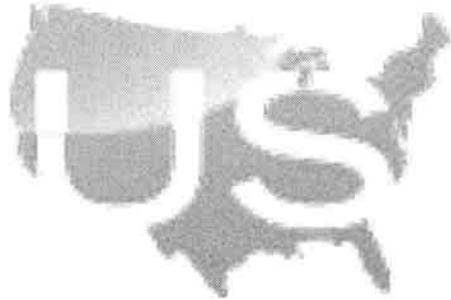


Forest Land area (acres)



2014 Harvest (cubic feet/year)





**CLUSTER
MAPPING**



HARVARD | BUSINESS | SCHOOL

Institute for Strategy & Competitiveness

The logo for the U.S. Economic Development Administration (EDA), featuring the letters 'EDA' in a large, bold, sans-serif font. Behind the letters is a faint, light-colored silhouette of an eagle with its wings spread, and two small stars are positioned between the 'E' and 'D', and between the 'D' and 'A'.

EDA

U.S. ECONOMIC DEVELOPMENT ADMINISTRATION

In 2012 across the United States there were

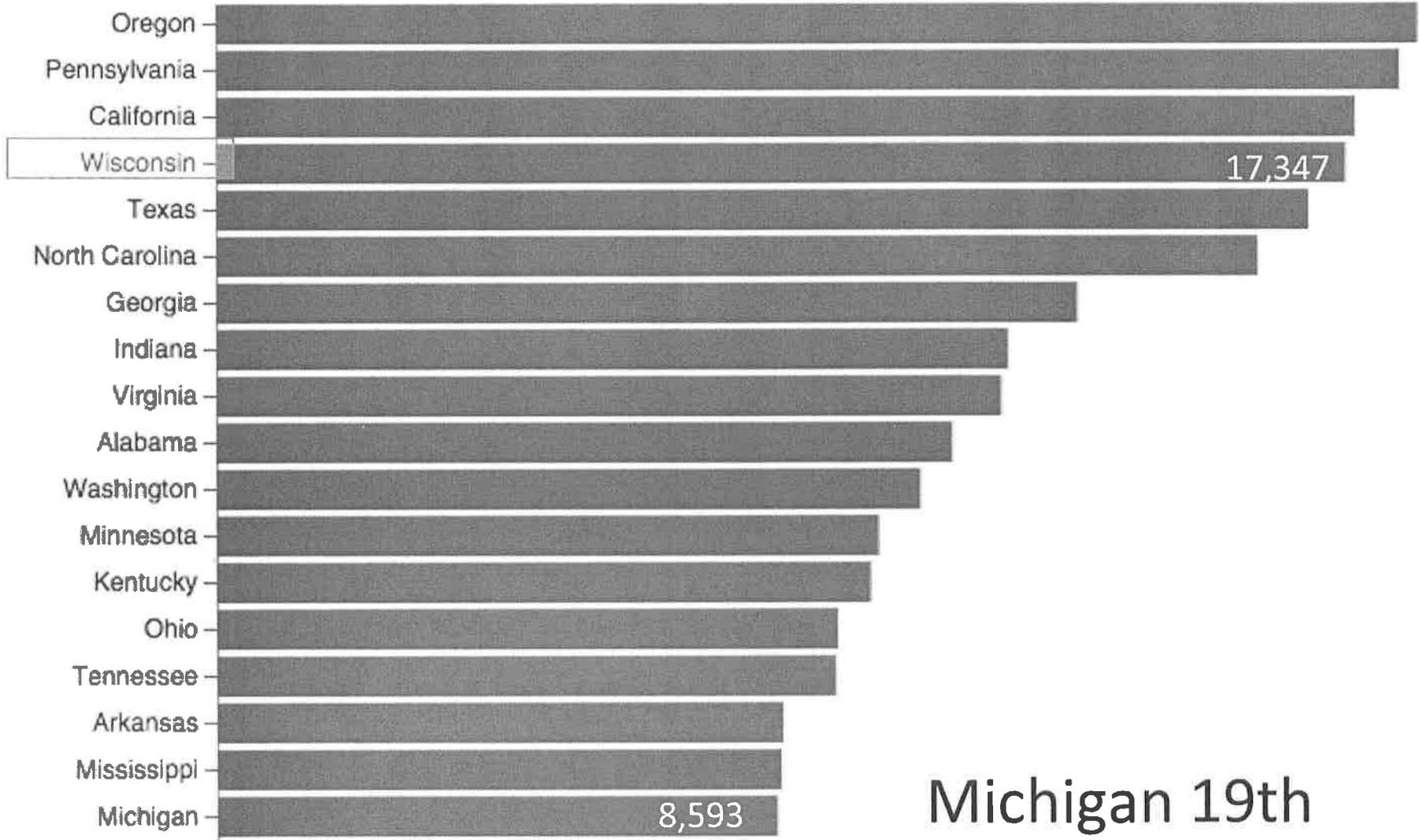
- 65,000 jobs in forestry & Logging (Michigan 15th)
- 102,000 jobs in wood processing (Michigan 17th)
- 216,000 jobs in wood components and products (Michigan 16th)
 - Wisconsin 1st

Wood Products Cluster

Employment by State, 2012

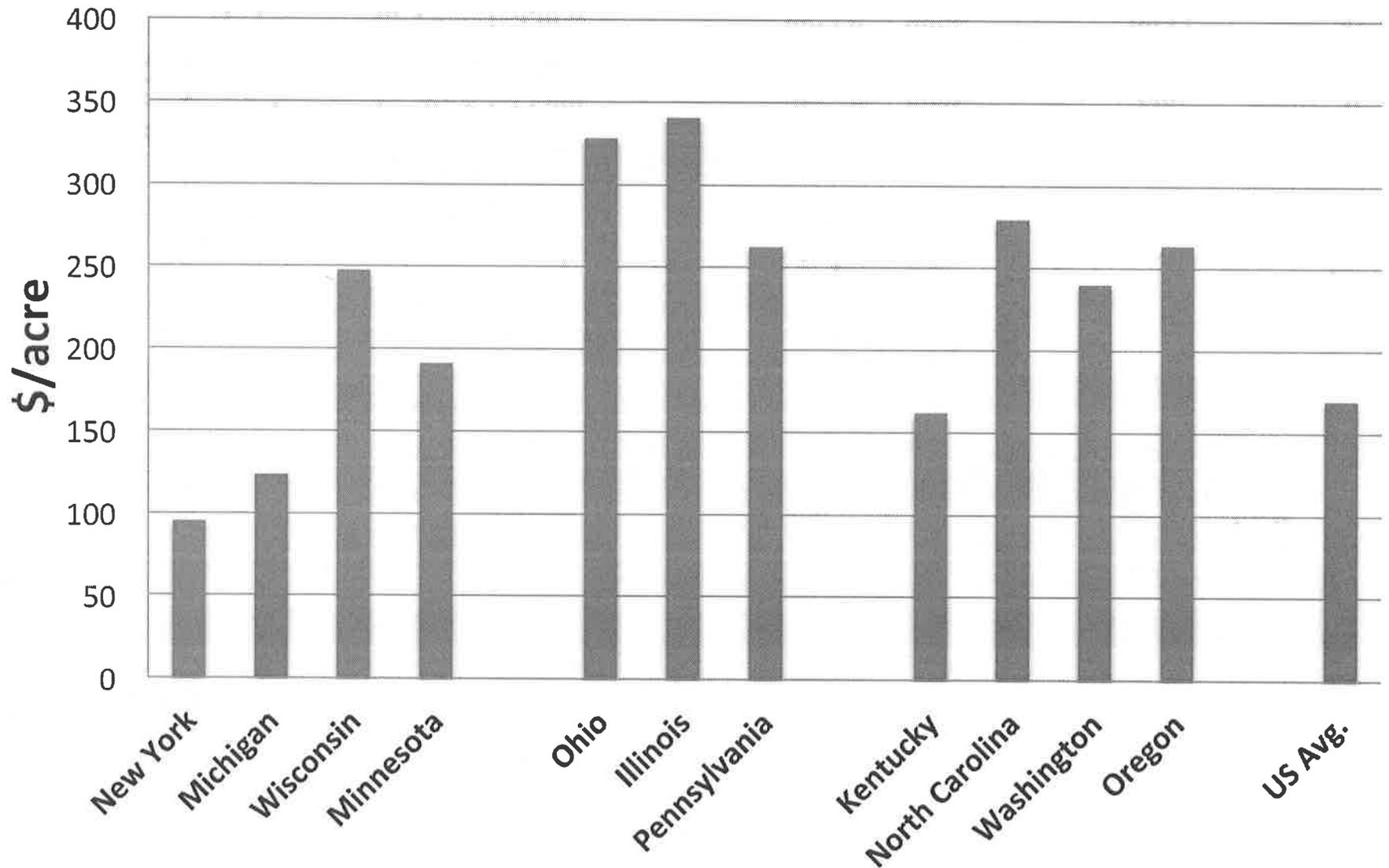
Industries in Wood Processing

Industries in Wood Components and Products



Michigan 19th

Value of Wood Products Industry (no pulp and paper) per acre of Timberland (Data - American Wood Council)



Emerging opportunities to add value to the forest industry

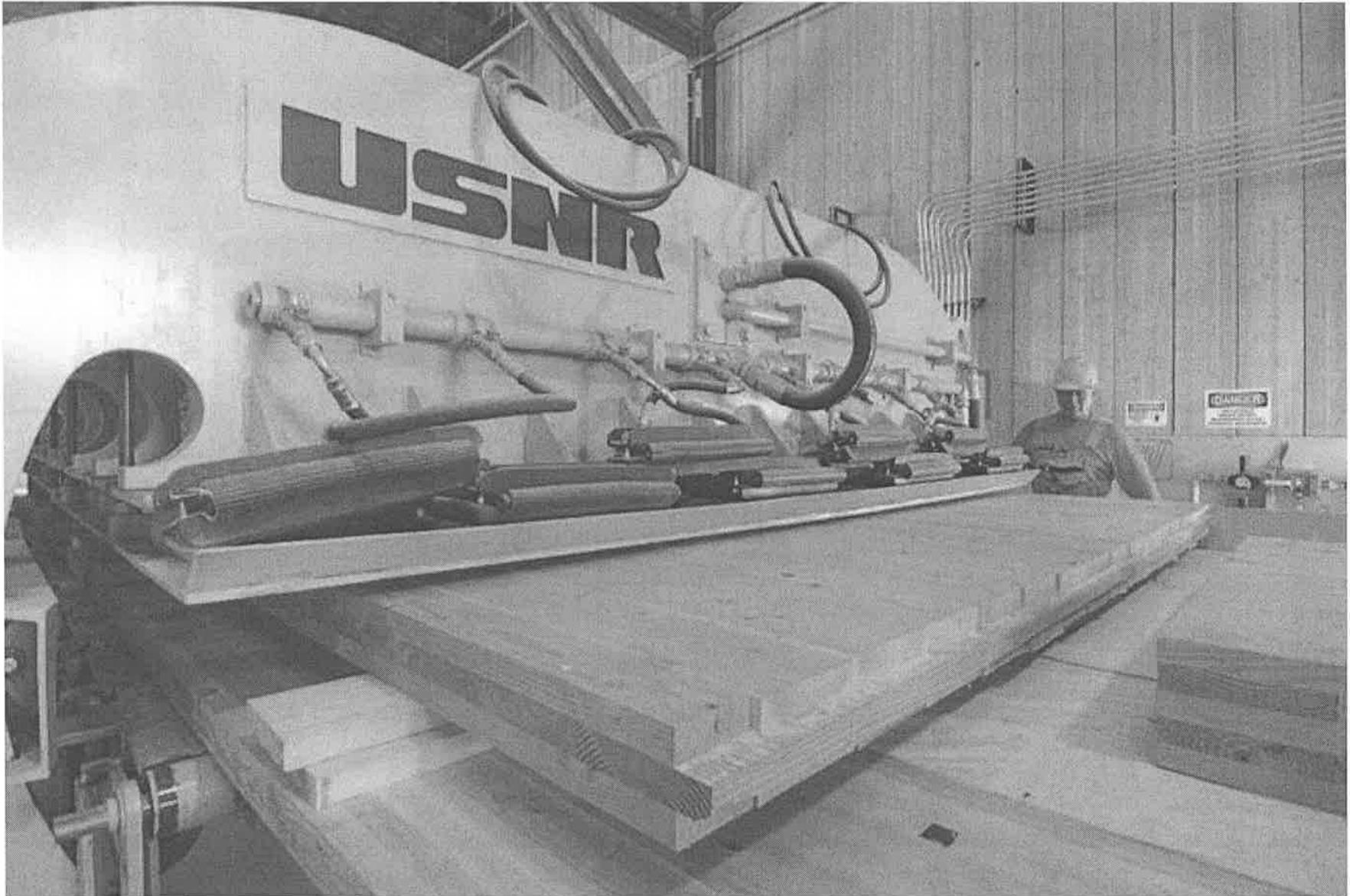
1. Mass timber buildings & Engineered wood products
2. Pulp and Paper conversion to Biorefinery
3. Niche products and markets

Minneapolis, office building that recently broke ground.





2015 First CLT panels made in the US - Oregon





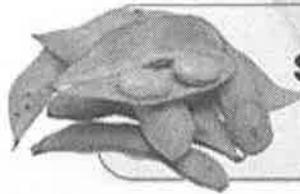
SUSTAINABLE MATERIALS STRATEGY

What Goes In

Post-consumer plastics



Post-industrial yarns



Soy-based polyurethane

Engineering wood technology



Seats



Doors



Batteries



Tires



What Comes Out

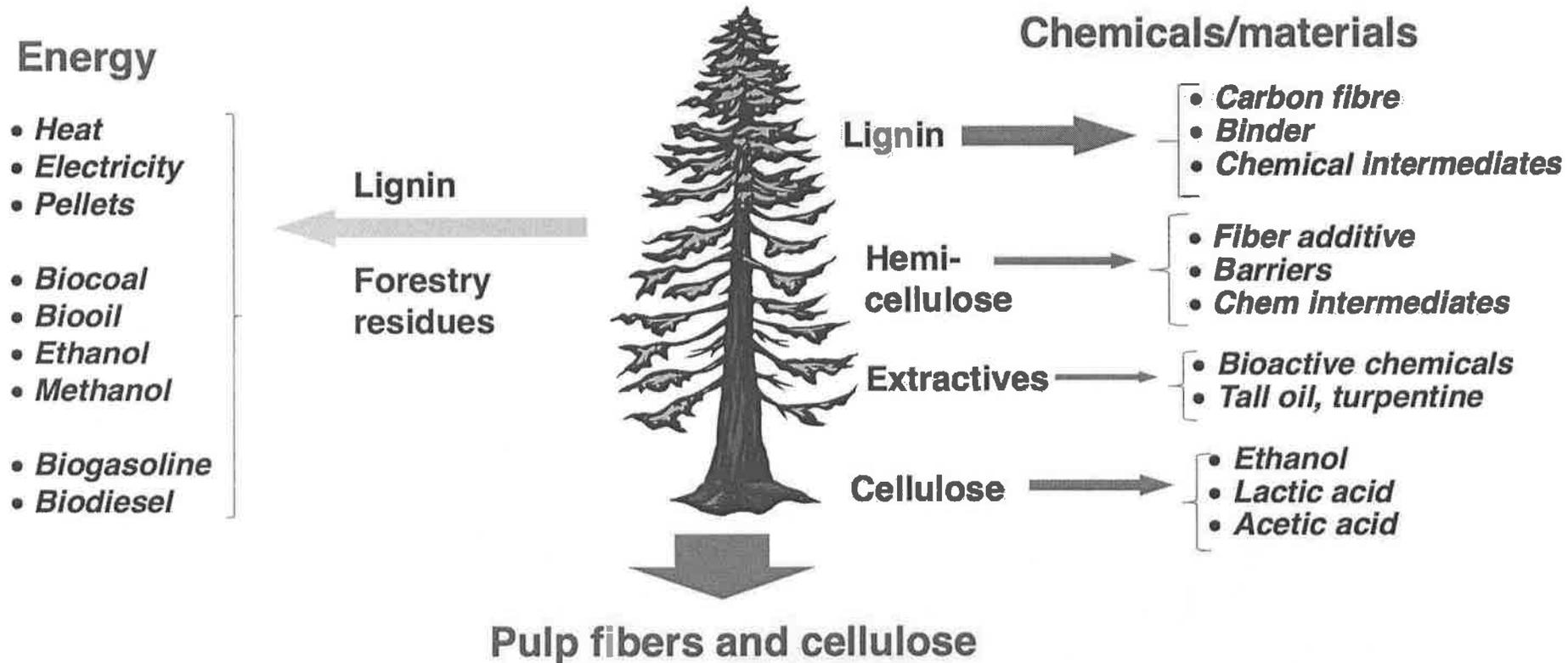




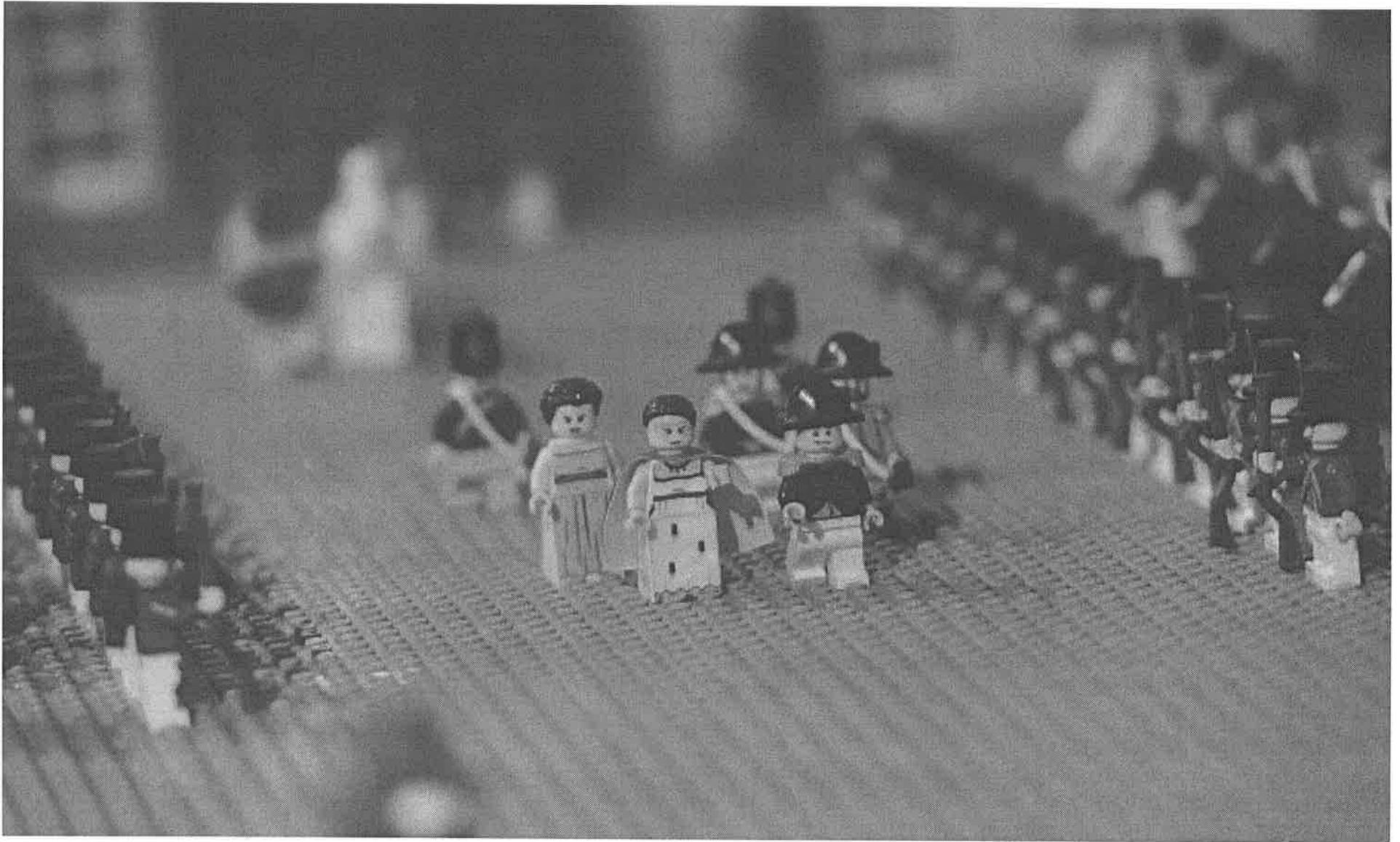
SUSTAINABLE MATERIALS STRATEGY



Possible products from a kraft pulp mill biorefinery



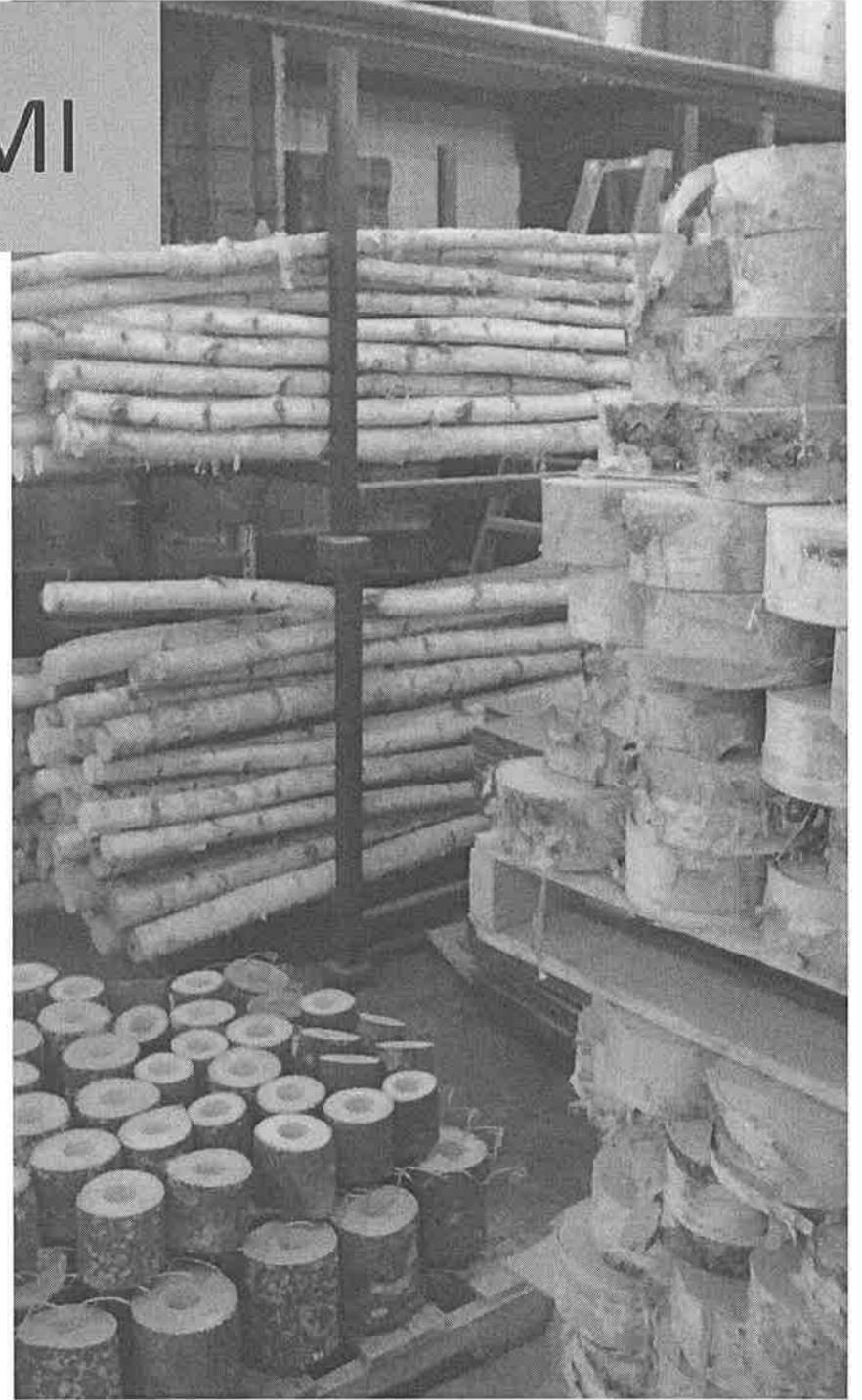
Large biorefinery cluster emerging in Sarnia – opportunity for MI



JULY 5, 2015

Lego to invest \$150 million dollars into finding a biodegradable material to replace the petroleum-based polymers.

Wilson, MI



Danielsons
sugarbush?



WOODINVILLE WHISKEY CO.
BOTTLE NUMBER 733
BATCH NET WEIGHT
14 8.5fl oz / 250ml

**MAPLE
SYRUP**

AGED IN FRESHLY EMPTIED WOODINVILLE WHISKEY BARRELS



MADE IN U.S.A.

MADE OF 100%
NATURAL MAPLE
SAP FROM THE
SHADY SUGARBUSH
OF AMERICA'S
NORTHWOODS.



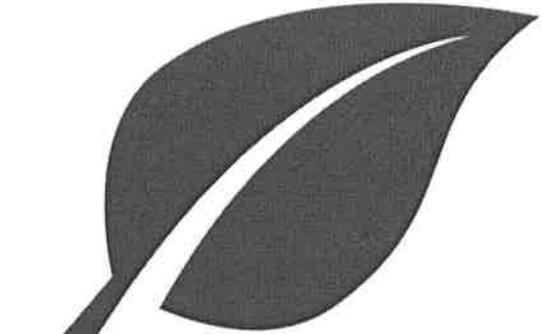
WOODINVILLEWHISKEYCO.COM

WOODINVILLE WHISKEY CO.
14508 WOODINVILLE REDMOND RD NE
WOODINVILLE, WA 98072

REFRIGERATE AFTER OPENING



Project **GREEN**

The logo for Project GREEN features the word "Project" in a large, grey, sans-serif font. Below it, the word "GREEN" is written in a much larger, bold, grey, sans-serif font. To the right of the word "GREEN", there is a stylized leaf icon. The leaf is dark grey with a white vein running down its center. The stem of the leaf is a solid dark grey line that extends downwards and to the left, ending at the bottom of the letter "N" in "GREEN".

- A cooperative effort (plant-based commodity groups & businesses, MSU, MDARD) to advance Michigan's economy through plant-based agriculture.

Project GREEN

Focused on Agriculture-

- Rapid, interdisciplinary, science-based response to critical and emerging issues
- Support of 45 ag commodity groups, MI legislature passed in 1997

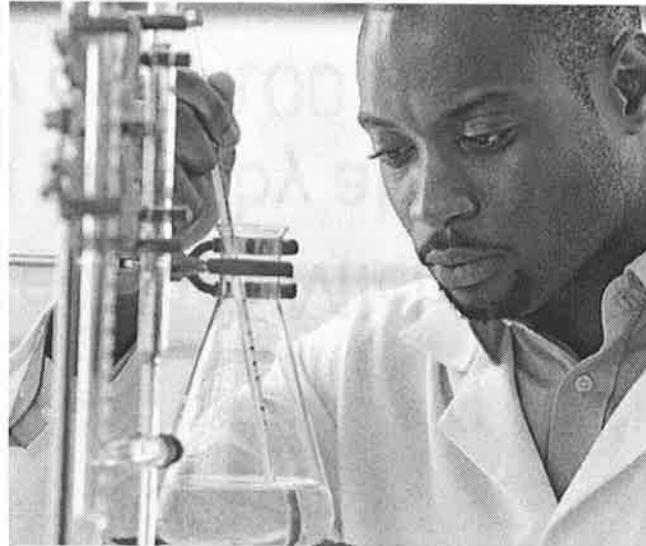
Project GREEN

- In 2012, MSU announced that Michigan's food and agriculture system grew by about \$20 billion since 2009 (now over 100 billion)

REFORGE

MICHIGAN

A proposal to support, diversify, and expand
Michigan's forest products industry.



REFORGE

MICHIGAN

MI Forest products industry currently worth 17.5 billion.
Strategic investment needed for 20+ billion

Other states are investing:

Oregon – \$63 million (50%public/50%private) for Wood Products Innovation Center

Wisconsin, Maine, Mississippi, Virginia, North Carolina

Canada – Federal and provincial governments investing hundreds of millions in Forest Product Innovations

REFORGE

MICHIGAN

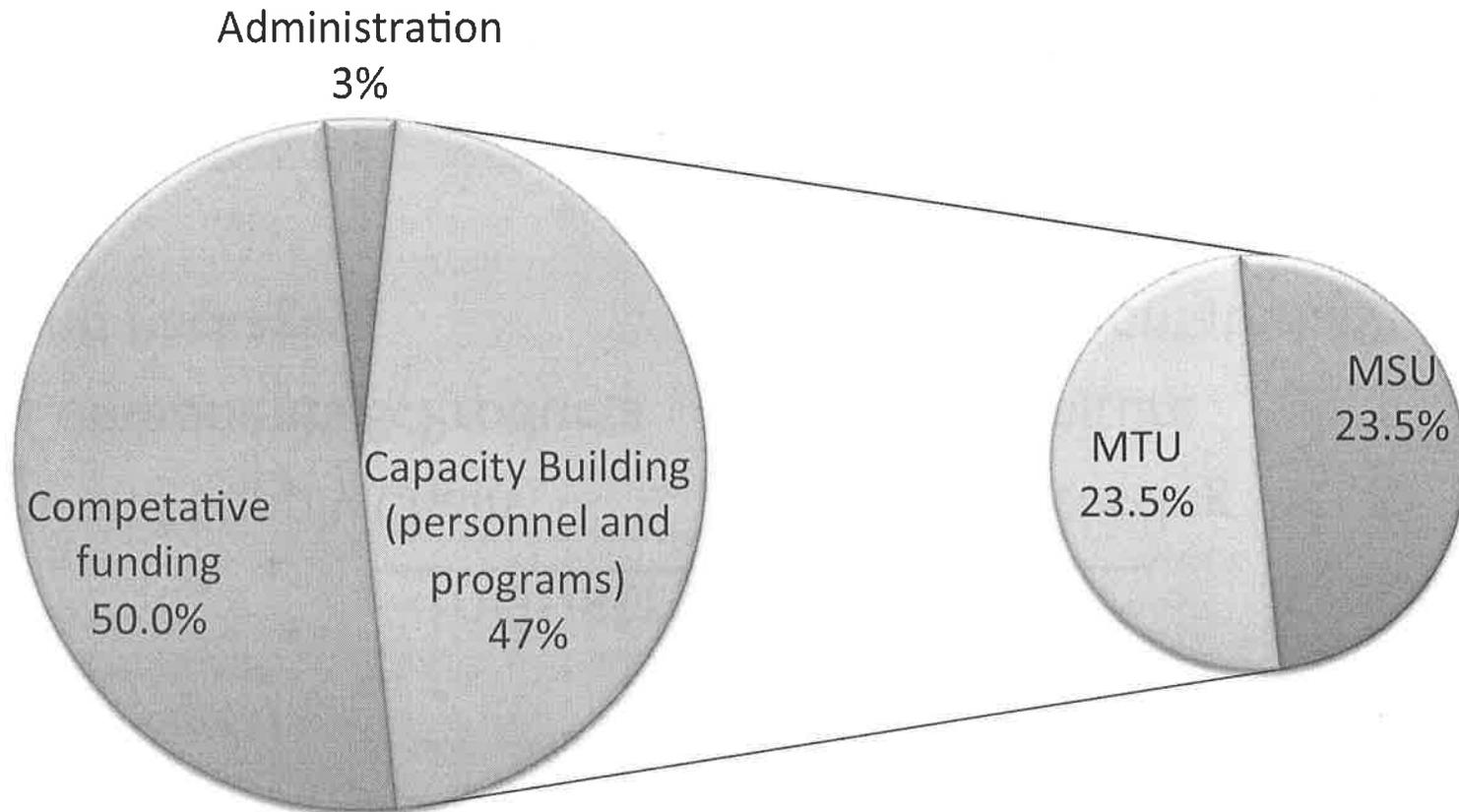
Five million \$ annual allocation (FY 2017) directed at two major goals:

1. Establish competitive grant program for research and extension on industry identified priorities
MTU & MSU lead but include all MI schools
2. Enhance delivery of innovative products and services by increasing personnel and program capacity in forest biomaterials (especially wood science & technology)
MTU & MSU partnership

REFORGE

MICHIGAN

Proposed Funding Allocation



REFORGE

MICHIGAN

Industry categories

Forestry and Supply Chain

Wood Components & Products

Paper and Packaging

Energy

Wood Processing

Wood Furniture

Advanced Biomaterials

Non-Timber Forest Products



REFORGE

MICHIGAN

- Governance by MTU, MSU & DNR (housed at MTU)
- Competitive grants
 - MTU & MSU lead but open to all MI higher ed
 - 50K-75K/year for 2 years
 - Must have industry match
- Capacity building
 - MTU & MSU collaboration to meet needs of industry and State of Michigan
- Industry priorities- gathered from trade groups, associations and professional societies



President's 2016 Budget Proposal on USDA-led Manufacturing Innovation Institutes

- \$80 million to support public-private partnerships to establish two Innovation Institutes engaging industry, leveraging funding, and facilitating technology transfer.
 - Biomanufacturing
Building the scientific foundation, processes, and workforce capacity to move bioenergy and biobased research from development to deployment and commercialization.
 - Nanocellulosics
Focused on utilization of cellulose to be turned into a renewable supply of industrial materials. ensuring that the United States is the leading global source of commercial cellulosic nanomaterials research, innovation, production, and commercialization.
- In line with the December 2012 report by the President's Council of Advisors on Science and Technology.

MiFBI

Michigan Forest Biomaterials Initiative

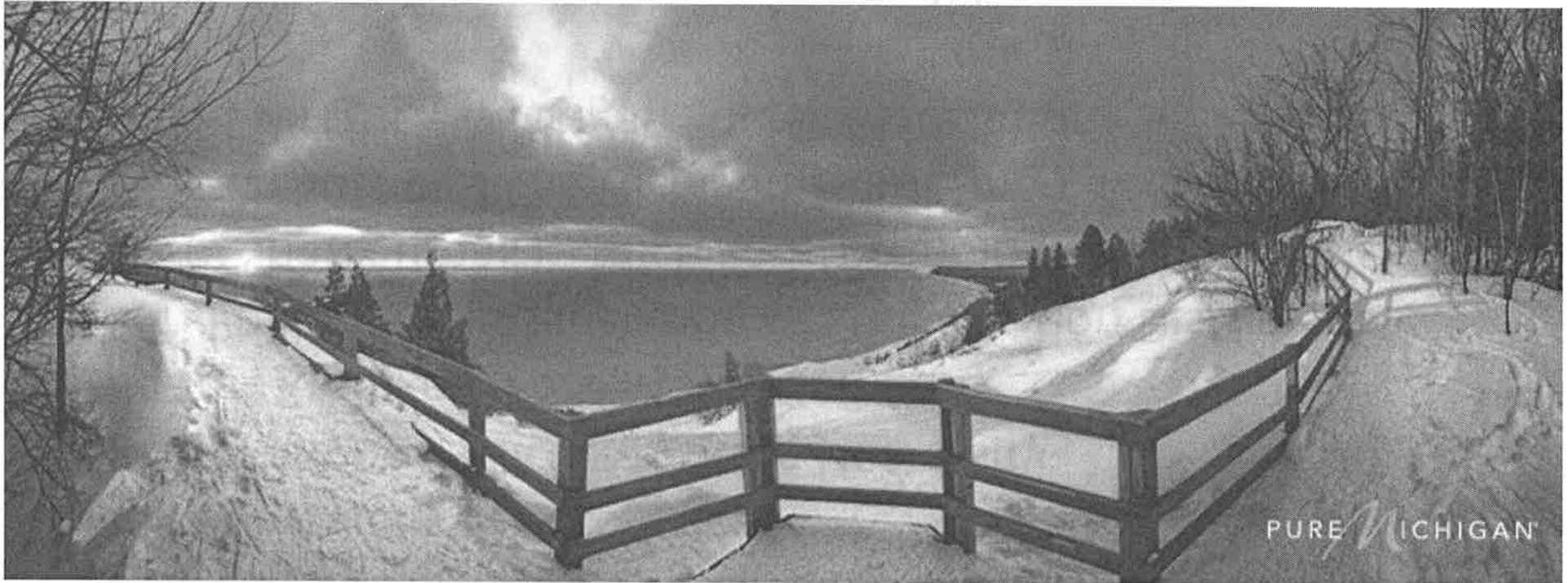
Current (interim) Board:

- Edward Becker – Friction and Wear Solutions, LLC
- David DeYoe – Resource Trends Consultant (Sec.)
- Jake Hayrynen – JM Longyear
- Richard Kobe – Michigan State University
- Robert Kreipke – Ford Motor Company
- Lori Phalen – MI Association of Conservation Districts
- Terry Sharik (Chair) - Michigan Technological University
- Warren Suchovsky – Michigan Timberman, MI Farm Bureau
- David Wright – Michigan Forest Association

Current (interim) Staff:

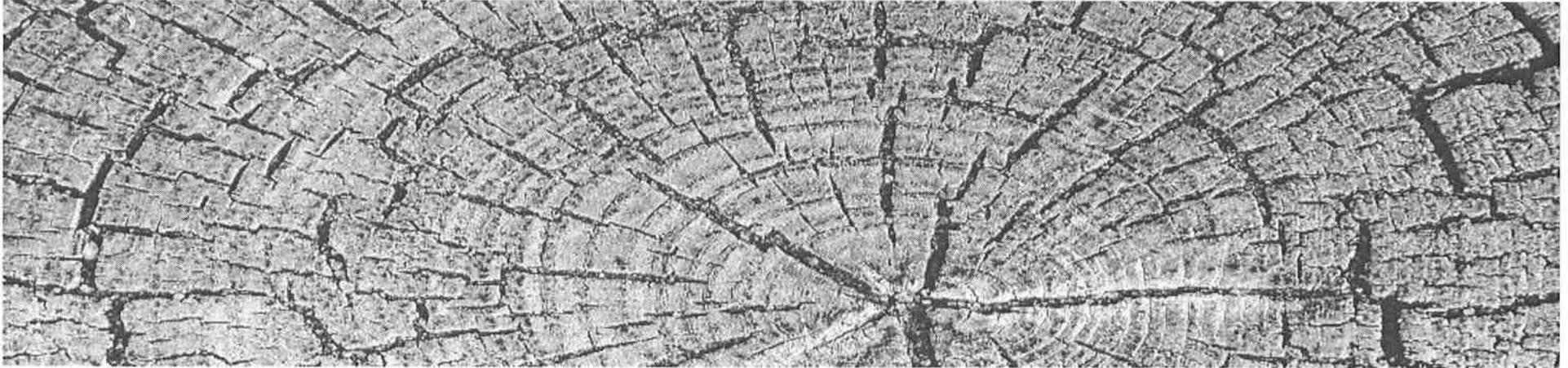
- Mark Rudnicki (Exec Dir) – Michigan Technological University

Michigan Forest Biomaterials Initiative (MiFBI)



Mission: To enhance quality of life in Michigan by fostering sustainable forests, communities, and economies through innovative and responsible production, use, and recycling of forest biomaterials.

Michigan Forest Biomaterials Initiative (MiFBI)



2015 Strategic Plan:

- **Developing Forest Biomaterials in Michigan's Green Economy**
- **Increasing Competitiveness of Michigan Biomaterials**
- **Ensuring Sustainable Supply From Public & Private Lands**
- **Generating A Fully Functional Supply Chain**
- **Enabling Supportive Policy Coordination**

Forests are the Future

- We have underutilized forest resources
- We are shipping raw resources and jobs to other states
- Other states are investing in adding value to wood products - surging demand for renewable and sustainable products. Huge potential to link with other Michigan industries.
- REFORGE is a unique and ambitious proposal to drive public private partnership Michigan

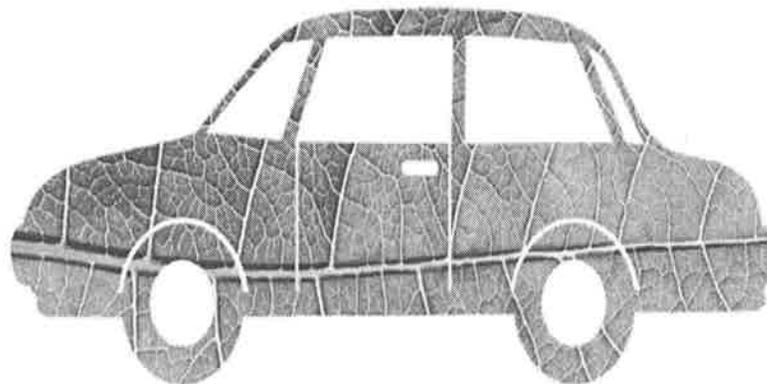
Bio-Based Materials Project Details

- Make it in America Challenge
- Project Partners
 - National Center for Manufacturing Sciences
 - Michigan Manufacturing Technology Center
 - Macomb Community College
 - Macomb/St. Clair Workforce Development Board
- Three year program
 - October 2013 - September 2016



Bio-Based Materials Project Goals

- Build employment and facilitate new investment in bio-based materials manufacturing
- Identify and meet with stakeholders involved in the bio-based materials space
- Create a roadmap report describing gaps and opportunities to make products commercialization-ready



Who Is Interested?



