

MICHIGAN WOOD WASTE

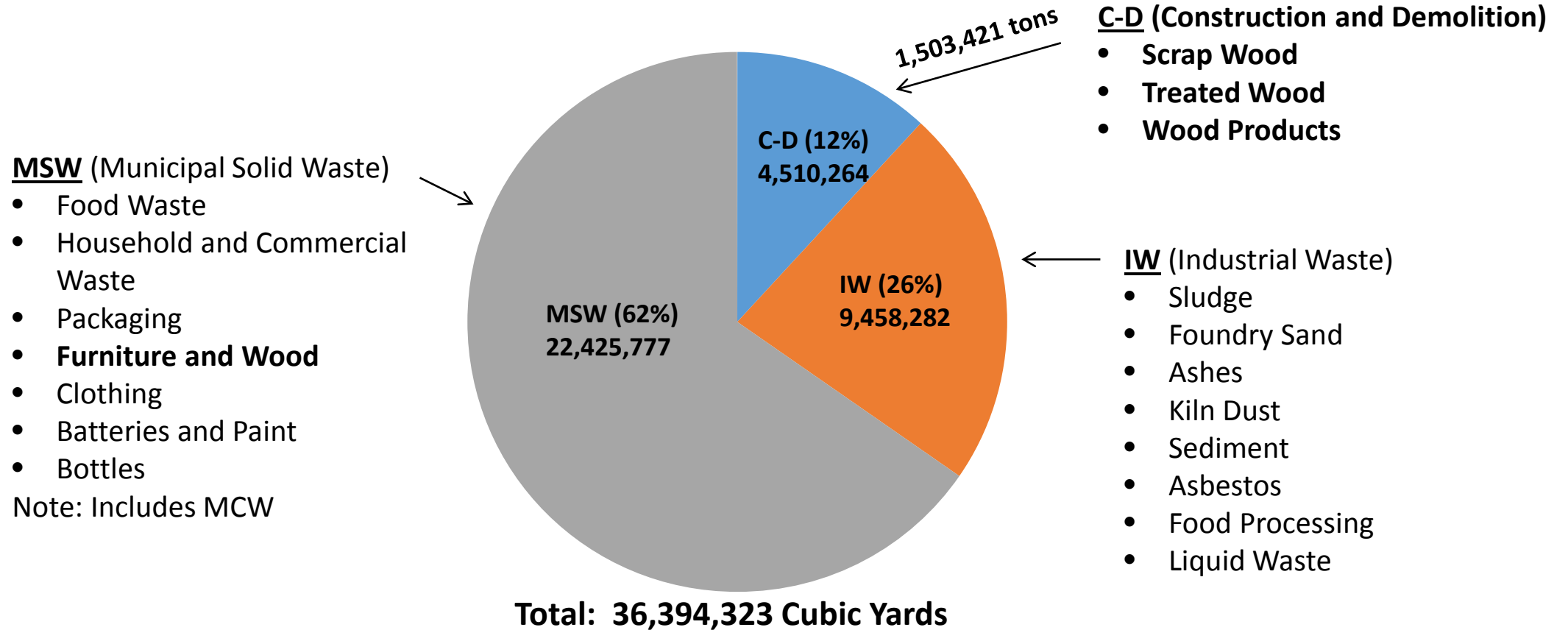
A CIRCULAR ECONOMY OPPORTUNITY!

Michigan Forest Bioeconomy Conference
February 1-2, 2017

Norman Christopher



Michigan Solid Waste Landfill (Cubic Yards)



Source: MDEQ Solid Waste Report FY2014

~ 85% of Michigan MSW is practical to recycle with an estimated economic value of ~ \$300MM - \$350MM with opportunity to create ~ 2,500 new jobs.

Source: Michigan MSW Characterization Study

Furniture Manufacturers Generate Greater than 100TPD of Aggregate Wood Waste Streams



Construction Manufacturers Generate “?” of Aggregate Wood Waste Streams



Wood Waste Streams

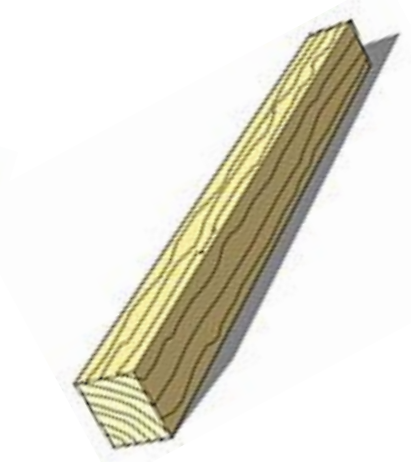
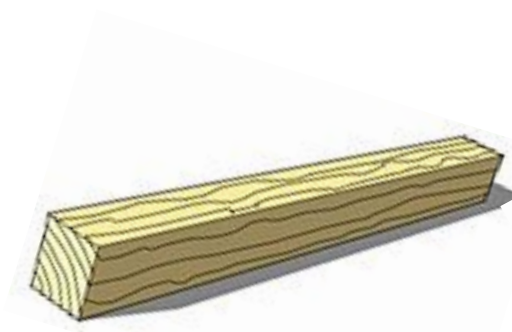
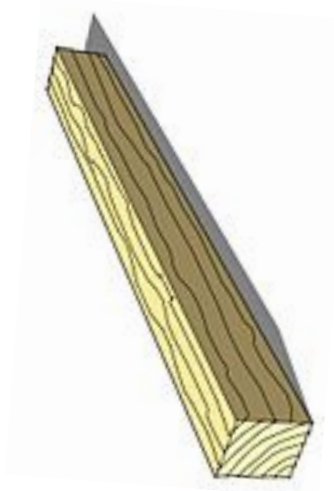
Sources

- Construction
- Remodeling
- Demolition
- Manufacturing
- Furniture and Mattresses
- Packaging

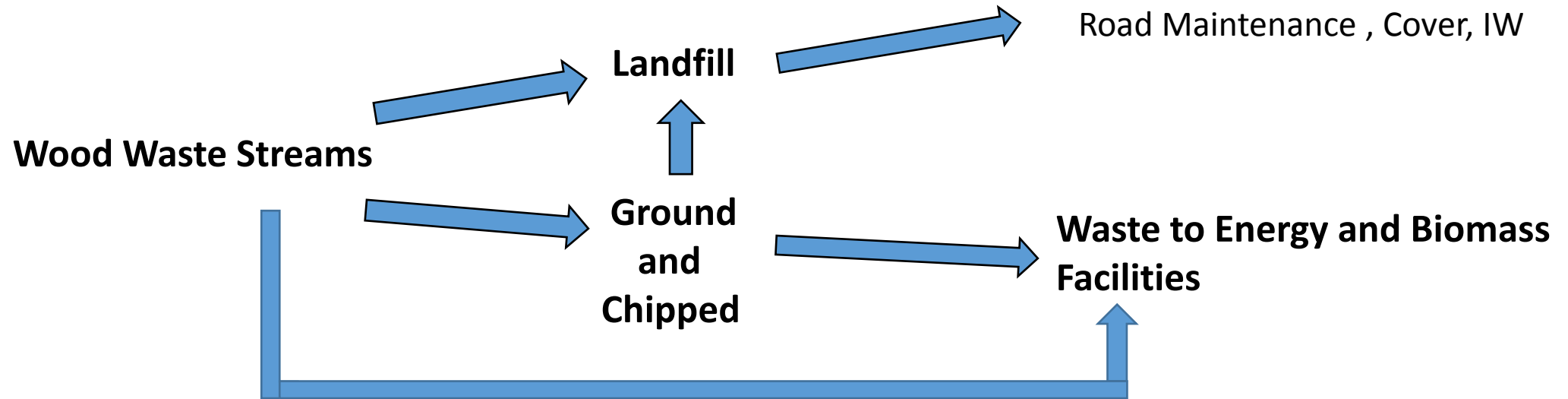


Types

- Pallets
- Plywood
- Particle Board
- Clean Wood
- Heat Treated Lumber
- Manufactured Wood Products
e.g. Engineered, “Resinated”
- Gaylord Boxes
- Wood Chips
- Lumber Cut Offs
- Branches, Brushes, and Logs



Manufactured Wood Waste Streams



Kent County DPW Future Driving Forces:

- Achieve 20% landfill reduction by 2020 and a 90% reduction by 2030
- Expand commercial sector waste diversion technical assistance
- Develop strategic partnerships including investments in sustainable materials management
- Create a sustainable business park master plan for expansion including zero waste to landfill (ZWTL) initiatives

The Journey of Wood Waste!

Linear Economy

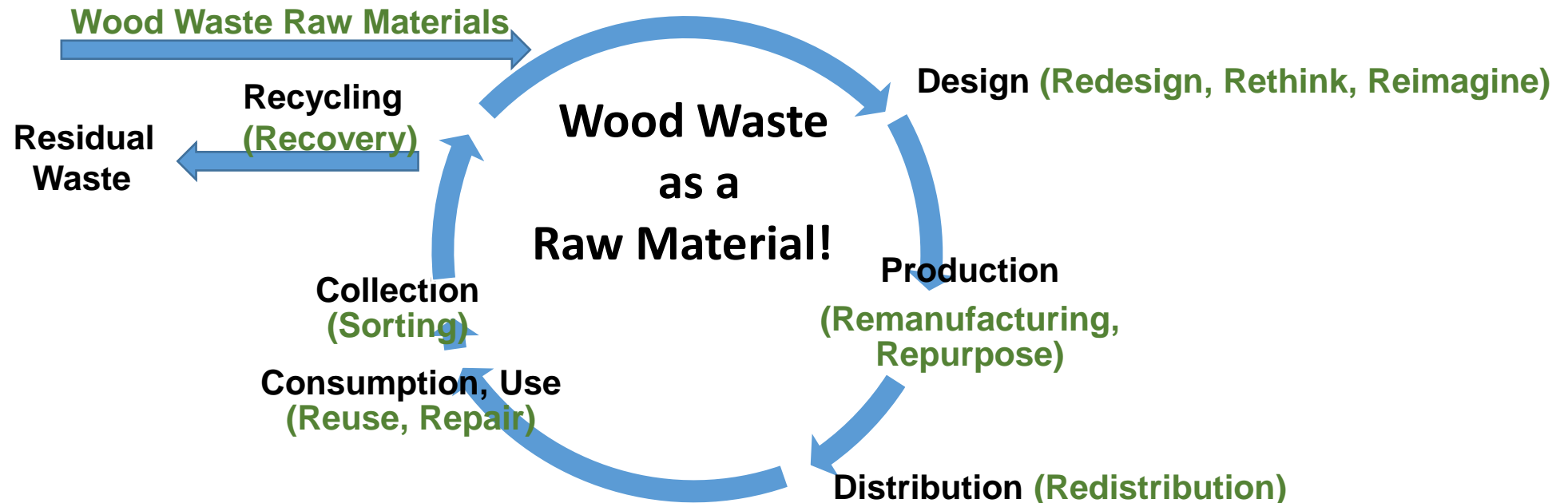


“Take Make Waste”

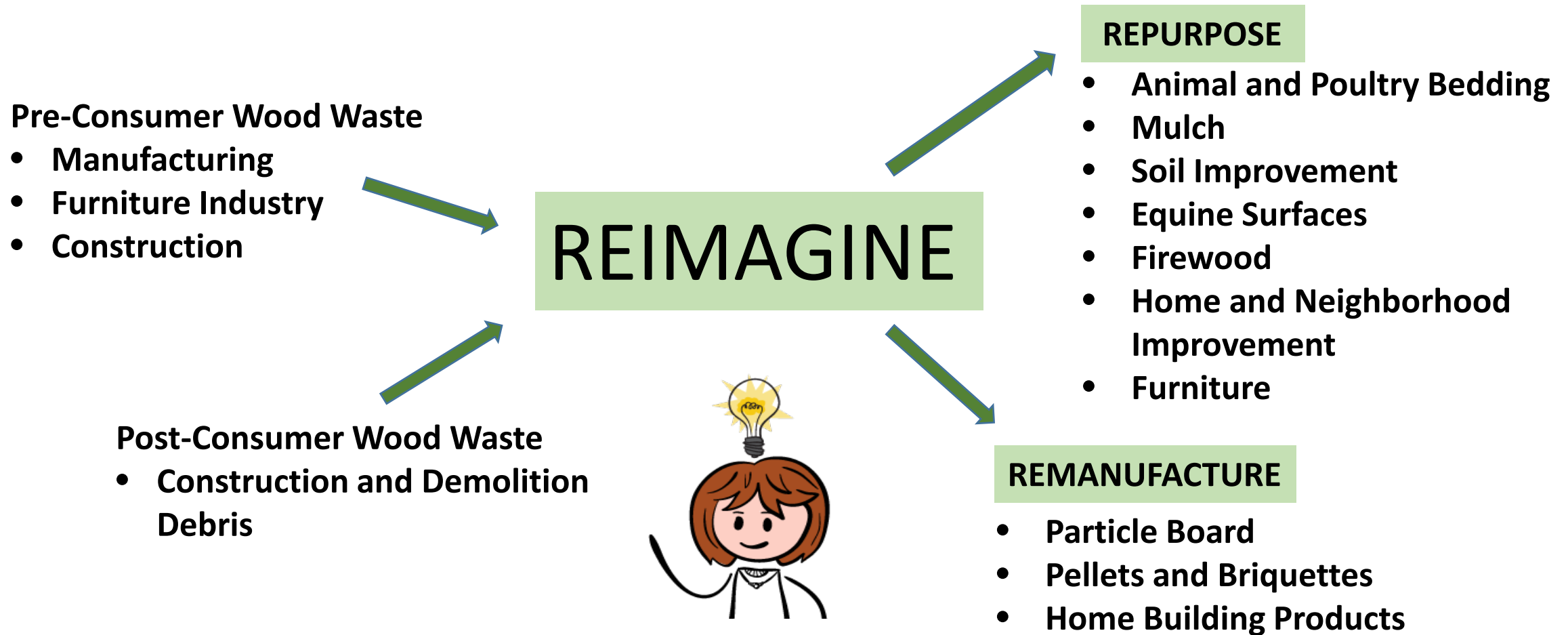


- Recycling
- Waste Minimization
- “ZWTL”

Circular Economy



REIMAGINE Other Uses for Wood Waste (Other than Waste to Energy)



Construction and Demolition City of Detroit

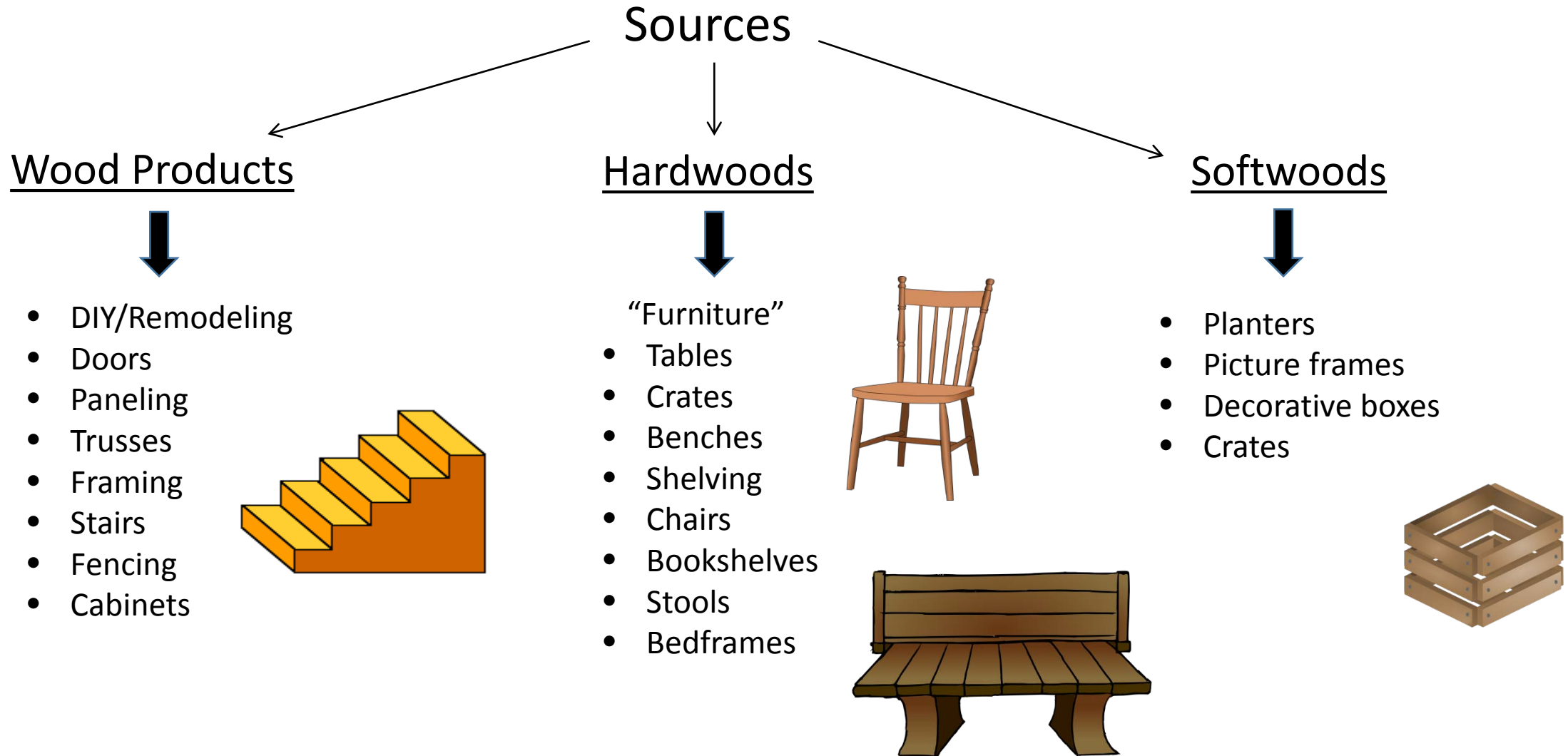
- Completed 10,000 demolitions with the goal of 7,000 homes in 2017
- Received > \$250MM in federal “Hardest Hit anti-blight funding” with ~ \$325MM in funding to be awarded to Michigan in February 2017
- Brought down 25 commercial structures totaling ~1MM sq. ft. with goal of 150 commercial demolitions in 2017
- Average home demolition costs:
 - \$9,500 per demolition between March 2014-January 2015
 - \$15,000 per demolition May 2015-March 2016
 - Some demolition costs near \$20,000 due to shortage of fill dirt and stringent asbestos removal

Contaminant Concerns and Drawbacks for Wood Waste as a Raw Material

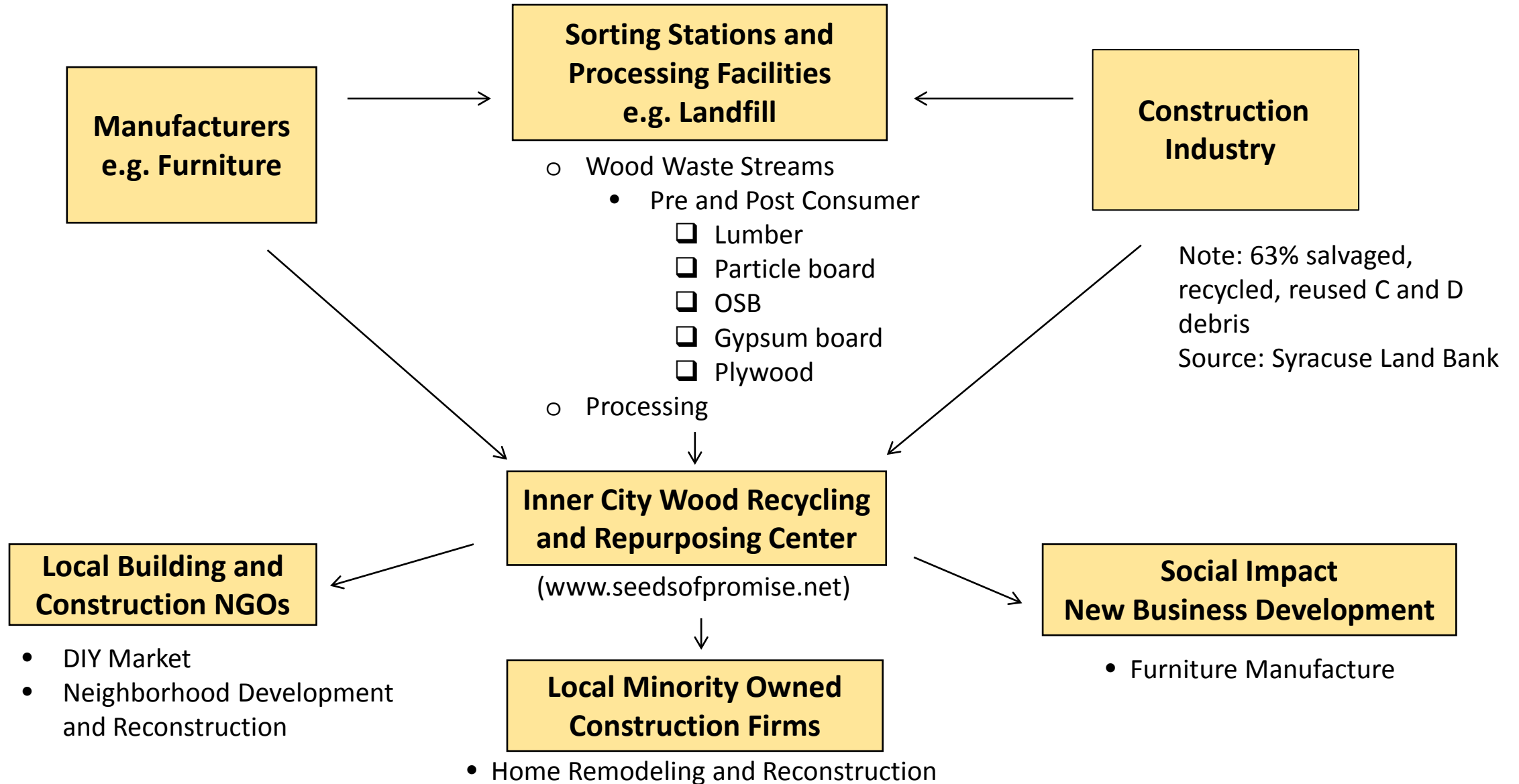
- Hazardous materials e.g. oil, tar, etc.
- Plastic materials e.g. foam, film etc.
- Metals e.g. ferrous, non-ferrous etc.
- Minerals e.g. concrete, brick etc.
- Plasterboard and asbestos
- Chemicals e.g. powder coat, glues, adhesives etc.



Home Improvement Uses for Repurposed Wood Waste



West Michigan Wood Waste Repurposed A New Business Model!



West Michigan Key Success Factors to Repurposing and Remanufacturing Wood Waste

- Improved mapping, characterization, and inventory of pre and post consumer content wood waste streams
- Wood waste collecting, sorting, and recycling infrastructure
- Reuse, repurposing and remanufactured wood product infrastructures
- Public, private, municipal and academic partnerships are needed
- Consumer behavior changes in sustainable wood product production and consumption
- Local supply chain management infrastructure for Circular Economy Model
- Continued development of the Wood Waste Circular Economy Business Model
- **Future Benefit:** creation of new wood waste business opportunities, products and services, and jobs, in addition to improved waste minimization and positive environmental impact



Thank You!

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