



WISCONSIN RAPIDS
RECOVERY AND REUSE PLAN

ECONOMIC
OPPORTUNITIES
ANALYSIS

2023



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PROJECT DESCRIPTION

PROJECT INTRODUCTION

The closure of the Verso Paper Mill in Wisconsin Rapids in 2020 sent a shockwave through the community and the local economy. The most direct impacts of the closure are felt by Wisconsin Rapids itself, but closing the facility was a regional economic loss with implications for Wisconsin’s economy as a whole. However, new opportunities are emerging to refocus the region’s and community’s resources. Wisconsin Rapids has a unique set of assets ideally suited to launching a project that reutilizes the infrastructure and expertise of the state’s forest products industry.

The pulp and paper industry has long been a key foundation of central and northern Wisconsin’s workforce and economy, and this closure is the latest loss in an ongoing trend of consolidations and closings in the industry statewide. This closure was one of many recent examples of the ongoing decline of Wisconsin’s paper industry.

The impacts of the mill’s gradual decline and recent closure include direct economic impacts including lost jobs and wages, indirect economic impacts affecting supporting businesses and industries, and qualitative community impacts that are difficult to quantify but have profound long-term effects on quality of life and economic strength of the community and region.

Local, regional, and national officials recognize the importance of repositioning the Wisconsin Rapids Mill site to stabilize the economy in the short term and to strengthen the regional economy, create jobs, and achieve long term economic sustainability in the face of an evolving pulp and paper industry that has been a staple in Wisconsin and the upper Midwest for over a century. This project has the potential to open new opportunities for Wisconsin-based businesses, to provide opportunities for private researchers and university academics to commercialize new products, to position Central Wisconsin as a renewable energy leader, and to help create jobs throughout the state.



SITE INTRODUCTION

For more than 125 years, Wisconsin Rapids has been at the heart of the pulp and paper industry. Despite a succession of owners, the Mill has proudly sat on the west side of the river and served as the economic engine of the City and Wood County by innovating new processes, creating jobs, and generating wealth. Just as important, it has played a critical role in the life of the community by supporting local charities, providing civic leaders, and spawning numerous new businesses, all of which continue to have a tremendous influence on community life today.

Throughout its history, the Mill continued to adapt and transform the way it did business and the products it created. Over time it grew to more than 1,000 acres with 915 employees producing 540,000 tons of paper annually. Nevertheless, the last owner, Verso Corporation, was not able to overcome the increasing challenges faced by the paper industry and was forced to idle the Mill in the summer of 2020.

Well before the Mill's closure, the City recognized the need to diversify its economy and has taken many positive steps in that direction. While this has helped to lessen the impacts from the Mill's closure, the community and local economy have suffered tremendously including an initial loss of 915 jobs, a direct loss of 464 additional jobs, and the loss of 816 indirect and induced jobs according to the Wisconsin Economic Development Corporation (WEDC). Corresponding to this, the WEDC reported an initial earnings loss of \$81.1 million, a direct loss of earnings of \$25.3 million, and another \$35.4 million loss in indirect and induced earnings. Similarly, the North Central Wisconsin Regional Planning Commission reported an initial loss of sales of \$5.58 million, mostly in the paper industry, and a loss of \$67.8 million in sales within Wood County alone, not including indirect and induced sales losses. For a City with a population of only 17,600 residents and a county population of only 73,000, the impacts have been severe indeed.



The community has been fortunate to have received immediate attention from the state to address dislocated workers. Further, state representatives from the area organized the Wisconsin Rapids Together Task Force consisting of a diverse group of local, regional and state leaders to assess impacts from the closure, assist the community in accessing resources and assistance, and explore options for the Mill's future. Through these efforts, the community has been able to directly communicate with the Mill ownership as to their future plans for the property.

Given that the key assets of the Mill, the supply chain, and workforce are still mostly intact, there is interest from potential operators and buyers. Further, there is a growing demand for sustainably produced products to replace those historically made from petroleum products. These include plastics, packaging, fuels, textiles, feed supplements, fertilizer, and filters, to name just a few. The one thing all of these have in common is that they can be produced from the same timber feedstock historically used by the Mill, and many start with the same processing and pulping process used to make paper.

While the Mill, Wisconsin Rapids, and Central Wisconsin region are positioned to move forward into new processes and products within the "wood basket" that maintain and strengthen existing assets, supply chains, and workforce, it seems unlikely that a single operator will be able to make use of the entire facility. Further, the paper industry continues to be volatile such that a new paper making operation that may be viable today may not be so tomorrow. As a result, the community has endeavored to determine a long-term, sustainable path forward for the entire Mill property and its related supply chain and workforce.



In 2023, Billerud Corporation acquired North American Verso assets including the Wisconsin Rapids Mill as well as papermills in Quinnesec and Escanaba, Michigan. Billerud is a packaging company headquartered in Sweden that specializes in materials that challenge traditional packaging such as sack paper, carton board, containerboard, kraft paper bags, flexible kraft paper, kraft medical paper, formable paper, liquid packaging board, and pulp. The company's North American operation is headquartered in Miamisburg, Ohio.

Billerud announced plans to convert the Escanaba Mill into a producer of sustainably made paperboard and continue operations at the Quinnesec Mill. Press releases regarding the acquisition identified the Wisconsin Rapids Mill and its components as "minor assets", and while they did not intend to restart the mill, the company will be evaluating whether to sell or hold onto the Wisconsin Rapids assets including the hydroelectric power company.

As of the writing of this report, Billerud is operating the converting facility at the Wisconsin Rapids mill but has not announced its future plans for the site. Therefore, further analysis and implementation of opportunities identified in this report will be dependent upon Billerud's ultimate plans.

This report presents broad economic opportunities for reuse or redevelopment of the Wisconsin Rapids Mill. The identified opportunities are based on an analysis of economic context including workforce trends, pulp, paper, and converting industry trends, forest industry trends, the regional and local economic context, past economic development efforts, and community input.



WISCONSIN RAPIDS
RECOVERY AND REUSE PLAN

ECONOMIC CONTEXT



ECONOMIC CONTEXT

This section summarizes workforce data impacting the Wisconsin Rapids region, Pulp, Paper and Converting Industry trends, Forest Products Industry emerging trends, regional and site assets, public input, and previous regional economic development efforts and studies. In total, these sub-sections provide a foundation for understanding the economic context of Wisconsin Rapids and the status of important industries. Overall, these findings support the broader economic opportunities identified later in this report.

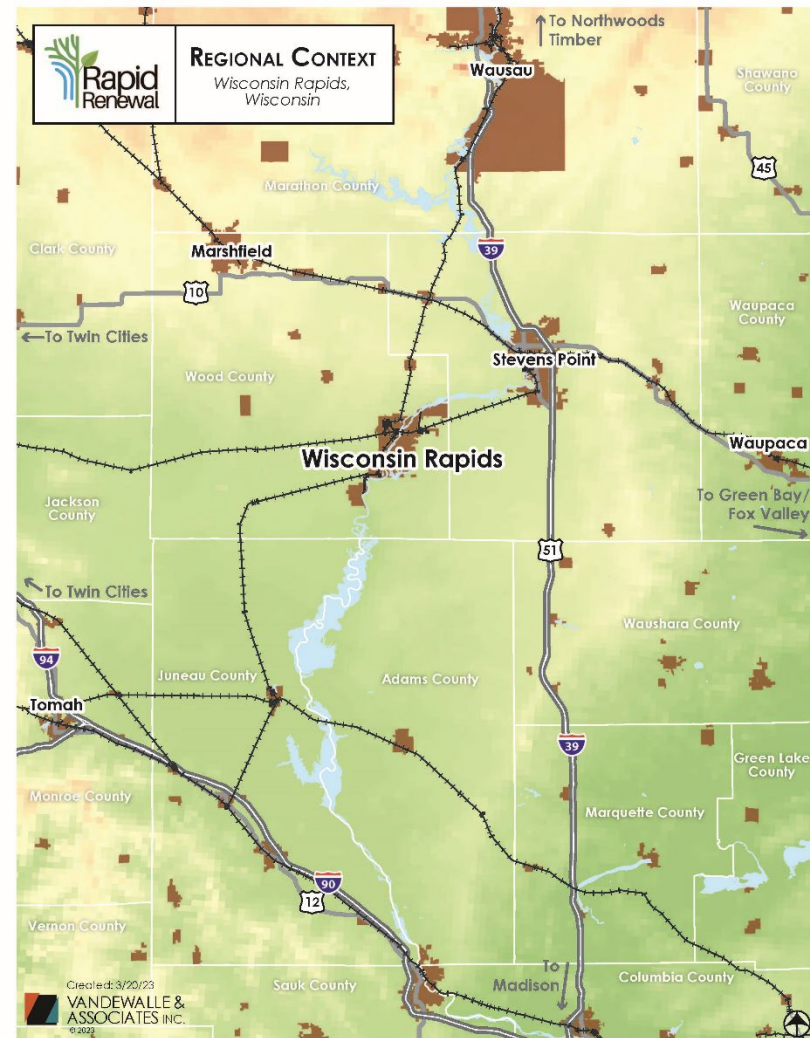
REGIONAL AND SITE ASSETS

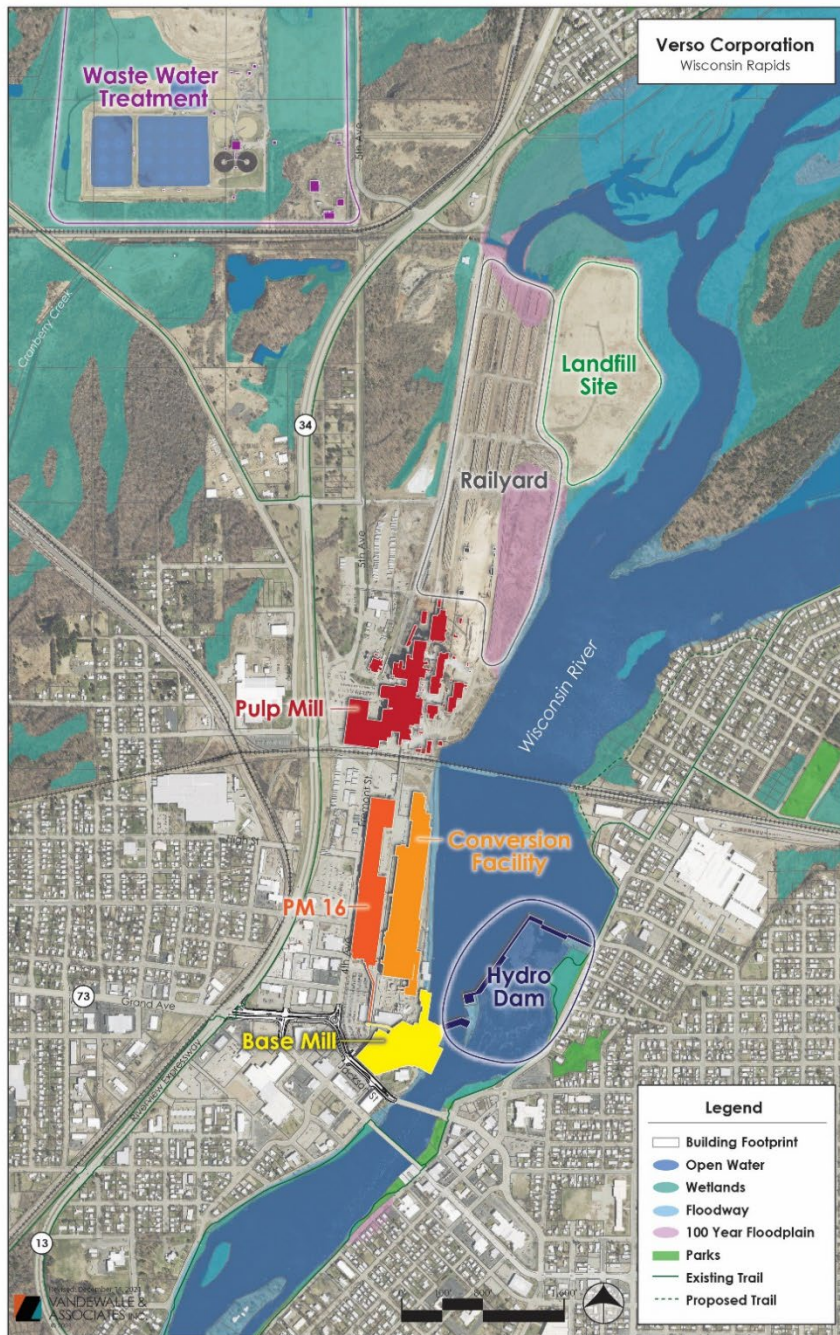
Key Regional Assets

Wisconsin Rapids lies in the heart of Central Wisconsin within Wood County. The region has historically excelled in multiple industry sectors and is well-primed for continued economic growth. Key regional assets include:

1. Abundant natural resources,
2. Historic supply chain networks,
3. Efficient highway transportation infrastructure,
4. Power generation capacity of the Wisconsin River, and
5. Skilled workforce.

It is the combination of key regional assets that set the Wisconsin Rapids site apart from other industrial reuse opportunities in the State of Wisconsin. Specifically, the combined strength of natural resources availability, historic industry success, and access to major regional and national metropolitan markets provide a solid foundation. Additionally, the unique size and scale of the Wisconsin Rapids Mill site itself compared with other shuttered paper mills across the state make the Mill site attractive for economic reimagining.





Key Site Assets

The former papermill site itself is primed for continued service in many of the region's key industry sectors. At approximately 1,000 acres in size, the site is much larger compared to other shuttered mill sites across the state. A quick scan of other idled paper mills and other manufacturing sites over the last decade in northern Wisconsin indicated that this site is significantly larger than all of the other closed mills and other manufacturing sites. Because the infrastructure is still in place (rail access, rail yard, wood yard, reliable hydro power, etc.) it is one of the few available sites for land-intensive industrial uses in the northern part of the state.

Within the site's acreage, multiple existing facilities are viable reuse candidates, while tracts of vacant surplus land could be repurposed or sold for near-term economic value. The site contains six main components including:

1. Industrial wastewater treatment plant,
2. Pulp mill with large wood yard and rail access,
3. Paper Machine 16 building,
4. Converting facility,
5. Base mill, and
6. Federally licensed hydro power facility.

WORKFORCE DATA

Economic losses resulting from the idling of the Wisconsin Rapids Mill have been tabulated across multiple reports. The project team conducted a thorough economic snapshot and workforce analysis as it relates to Wisconsin Rapids and the Mill site, which is documented in full in Appendix B. Key summary points are provided on the following pages. Overall, the expansive and immediate economic shocks from idling of the Mill included the loss of approximately 902 jobs in 2020 along with the loss of other direct outputs and operating costs, including original sources documented by the project team such as:

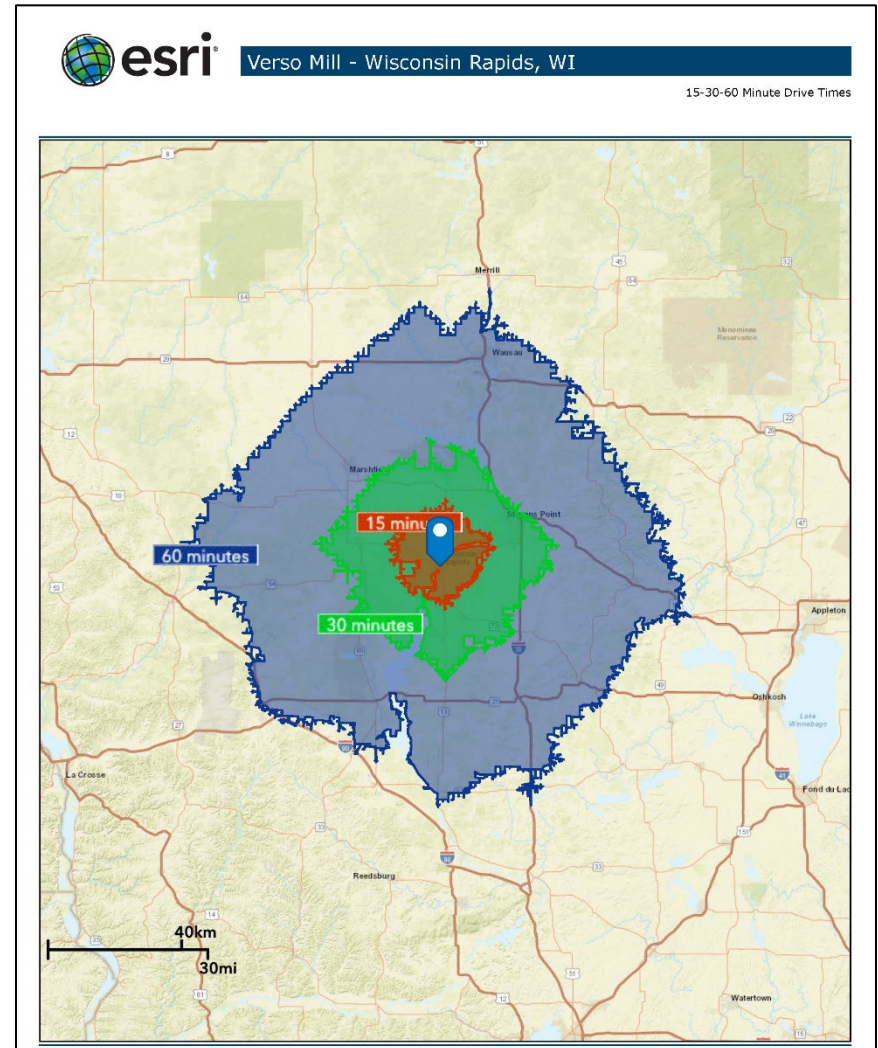
- 535,000 total tons of shipped product (93% directly to customers).
- \$566 million in total revenue (sales of coated and specialty papers, paperboard, pulp).
- \$535 million in direct operating costs.
 - \$243 million in direct material inputs (wood fiber, energy, chemicals, and other raw materials).
 - \$99 million in labor and benefits.
 - \$96 million in fixed costs (maintenance, mill operations).
 - \$67 million in freight hauling costs.
 - \$29 million in other costs (warehousing, inventory reserves, corporate and external overhead).

To understand the potential for replacement of economic loss, the following sub-sections summarize various workforce data points. This data broadly suggests a strong continued economic base. Economic opportunities identified in this report may capitalize on these workforce assets and are also shaped by potential limitations such as a decline in labor force participation.

Drive Time and Labor Shed Analysis

Within a 60-minute drive time, Wisconsin Rapids has access to employees within Stevens Point, Marshfield, Wausau, and portions of surrounding Central Wisconsin counties. Within the 15 and 30-minute drive time areas, there is a balance between respective City residents and number of workers who are not residents. This close alignment

suggests Wisconsin Rapids is not simply a “bedroom community” but rather a leading economic center within Wood County and Central Wisconsin more broadly. Wisconsin Rapids is in fact a net importer of jobs. With an estimated 53,000 jobs within a 30-minute drive, local employers have access to a significant labor force of nearly three times the total population of Wisconsin Rapids.



Housing

The housing stock closest to the mill property and within the City is stable. Occupancy rates and median home value are strong; both household incomes and home values have increased dramatically across the 15-, 30-, and 60-minute drive time areas around the mill site. Meanwhile, persistent inflation is eroding relative gains in prosperity for workers and households more broadly. This indicates that while economic shocks like the mill closure were certainly felt at the acute local level, it appears macroeconomic factors are most responsible for any lingering uncertainty amongst both firms and households in the Wisconsin Rapids area.

Unemployment and Labor Force Participation

Unemployment in the Wisconsin Rapids Area has been historically low in recent years, suggesting the idea that more or less everyone in the labor force who wants a job has one. With a median age of about 39 years old, Wisconsin Rapids will need to remain a competitive destination for workers and industry in order to maintain a workforce adaptable to changing economic trends. Employers will need to reconsider strategies for recruitment, including needs to move more quickly toward automation to get by with fewer employees. The area will also need to consider the lack of childcare, affordable housing, and transportation issues to address factors that keep people from moving to an area to work.

Other Economic Clusters

While the Central Wisconsin region has followed trends toward greater employment in technology and service-based employment, blue-collar jobs still make up a substantial percentage of positions (nearly 50% in the 15-minute drive time area). Manufacturing remains strong despite

shocks from closures and consolidation in the paper industry. While paper manufacturing remains a strong sector, the longer-term decline is important to watch. By 2020, the Wisconsin Rapids metro dropped from second to fourth in total papermaking employment by metro area in the nation compared to the previous decade.

At the same time, other economic clusters are well positioned for growth in the region including. Specifically, according to the U.S. Cluster Mapping Project, the following economic clusters are above the 75th or 90th percentile of all U.S. Metros and therefore poised for potential growth and opportunity for economic recovery at the Wisconsin Rapids Mill site:

- Transportation and logistics
- Wood products
- Food processing and manufacturing
- Production technology and heavy machinery
- Upstream raw chemical products

PULP, PAPER, AND CONVERTING INDUSTRY TRENDS

The Wisconsin Rapids Mill is an important piece in a broader changing industry in Wisconsin overall. While the state's paper industry has and continues to be a national leader, understanding today's challenges and emerging trends will lead to a stronger future. Additionally, understanding that the paper industry is rooted in another strong sector, the Forestry Industry, allows a broader examination of potential economic diversification.

Wisconsin's pulp, paper, and converting industries generated \$18.16 billion in economic output and employed 30,262 workers in 2018. Collectively, the paper industry is the fifth-largest manufacturing sector in Wisconsin. Wisconsin's paper industry is significant not only within the state, but it also leads the nation by many metrics, including in value of products sold, number of employees, and number of mills.¹ The "paper industry" is broad, which includes traditional pulp and paper as well as converting operations. The industry also includes commodity products such as brown paper for packaging as well as thousands of specialized papers including art paper, food packaging, tissues and towels, medical papers, industrial papers, printing and writing paper, among others.

Approximately 30 mills are in operation throughout Wisconsin with an additional approximately 200 converting facilities in the state which take paper produced and change it to a finished product. Over the last decade, Wisconsin has seen multiple mill closures, substantial job loss, difficulties in sustaining traditional paper markets, and attracting the needed workforce. Capital investment has been low since the mid-1990s leaving much of the industry with aging infrastructure. Industry leaders assert while challenges certainly exist, much of the industry consolidation and mill closure activity driven by declining paper demand has already taken place.



Even if the overall industry in Wisconsin is consolidating and stabilizing in key locations with modest investments in select mills, other communities are left retooling and reimagining their future as shuttered, century-long local economic engines leave gaping holes in their local economy.

In Wisconsin Rapids, opportunity remains for strategic economic repositioning. The key assets supporting this opportunity include broader economic trends focusing on bio-tech investments, reduced markets for petroleum-based products, demand for sustainable materials and packaging, the strength of the Wisconsin forest industry's raw materials, the local infrastructure network, and labor force.



FOREST PRODUCTS INDUSTRY EMERGING TRENDS

Pulp, paper, and converting operations are just one part of the broader forest industry, which includes numerous other sectors and products all based on the same raw material. While there are documented challenges and consolidations facing Wisconsin's paper industry, we can look to the broader sector it's rooted in to explore opportunities for which the Wisconsin Rapids site is well-suited. Wisconsin Rapids is located in the heart of dense forest biomass resources as referenced in the map below, boasting excellent access to forests of northern Wisconsin and Minnesota, as well as to markets and transportation infrastructure throughout the state and the upper Midwest. The forest products industry of the future has opportunities to address societal material needs while contributing to environmental goals by adopting new technology platforms in existing markets and expanding into new markets. The following provides a high level overview of expected near-term and mid-term trends in the forest industry, based on observation of changing market structures, product evolutions, new policies, rates of technological change, and consumer demand documented across the industry. These forest industry trends support this report's identified Economic Opportunities for the Wisconsin Rapids site.

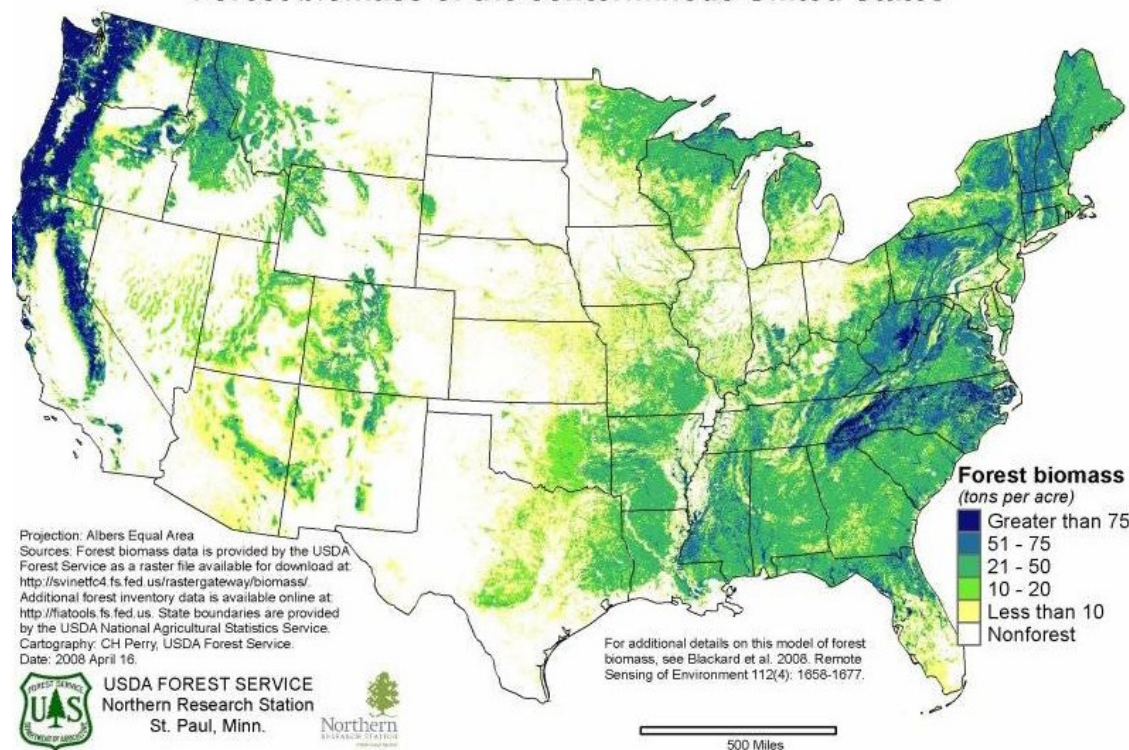
Near-term growth in the forest industry is expected to be driven by growth in existing market segments of hygiene products, advanced packaging, and building materials.ⁱⁱ Hygiene product growth will be driven by demand from an aging population for medical and elder care products, as well as greater emphasis on disposable, single-use materials rather than those that must be cleaned and sterilized to prevent bacterial and viral spread.

In packaging, emergence of new regulations and growing consumer demand for more sustainable products may encourage growth in product categories where renewable and compostable materials can replace competing materials, such as plastics.ⁱⁱⁱ

In building materials, regulatory policies that favor forest products with longer-term carbon sequestration may drive production and consumption of wood construction materials.^{iv} The emergence of the mass timber building industry is driven by this. These emerging opportunities can be addressed through incremental advances and retooling of the existing pulp and paper conversion and sawtimber industries to solve market needs.

In the mid-term, regulation and societal pressures will present opportunities for the forest products industry to diversify into new market areas, such as new plastics, and polymeric materials in adhesives and coatings, and renewable chemicals. For example, the recent introduction of lignin-based resins for plywood manufacturing allows for plywood manufacturers to reduce the greenhouse gas emissions of their product.^v

Forest biomass of the conterminous United States



In addition to carbon, newly introduced mandates to reduce microplastics has spurred research into coatings based on wood extracts such as lignin and hemicellulose. The emergence of the forest biorefinery, through which woody biomass is deconstructed into its fundamental chemical components, is the enabling technological advancement that underlies these new materials.

While it is difficult to predict what the forestry and forest products sectors will look like later this century, the Food and Agriculture Organization of the United Nations conducted a detailed scenario analysis of how changing market structures, policies, rates of technological change, and potential new products may impact these sectors through 2040. Assuming these factors remain unchanged through 2040, North America could experience increasing forested area, increased total growing stock and production of industrial roundwood, increased prices (although modest) for primary and secondary forest products, reduced share of global sawn wood production volume, stagnant wood-based panel production, and increased consumption of forest products.^{vi}

Diversity of Markets



Forest Industries of the Future Symposium

An industry symposium hosted by the project consultant team in July 2022 highlighted forest products research and included a roundtable discussion regarding pathways and tools for commercialization of research challenges and opportunities for the future of Wisconsin's forest products industry. Speakers identified continued markets for pulp and paper products as well as emerging alternative forest products and technologies for which Wisconsin's economy is well positioned.

Discussing this research contributed to the identification of potential economic opportunities for the Wisconsin Rapids mill site, some of which are shown in the provided exhibits on this page. Audience members included a variety of industry leaders, researchers, policy makers, community non-profits, and economic development professionals that work in and impact Wisconsin's forest products industry.

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PUBLIC INPUT

Through the Recovery and Reuse project, over 650 members of the public, elected, and appointed officials provided their feedback on priorities that should be addressed in future planning processes and activity regarding the Mill site. Input opportunities included specific work sessions with the Common Council and Plan Commission members as well as with the general public. The project team also published an online survey available to the public. Ultimately, these input opportunities sought to hear what community members view to be top priorities in advancing the Wisconsin Rapids Recovery and Redevelopment Program. The primary survey question asked participants to rank five to seven priorities from a large list of possible goals for the redevelopment and reuse of the former Verso Paper Mill Site.

Participants were asked to rank priorities based on the ability of each option to meet the needs of the community.

Survey results indicate that respondents would like to see the site primarily used to expand, retain, and attract companies to provide new jobs within Wisconsin Rapids. In addition:

- Respondents emphasized the desire for the **expansion and attraction of quality jobs** to enhance long-term economic sustainability. Capitalizing on the redevelopment opportunity to diversify the community's economic base is advisable.
- At the same time, respondents called for the Mill site to be **redeveloped quickly**, potentially indicating the need for additional quality jobs or the fear that the site could sit underutilized, vacant, and an eyesore if action isn't taken to redevelop it in the near term.
- Respondents emphasized prioritization of **environmentally responsive redevelopment**, including the mitigation of environmental pollution and the reuse of existing facilities as much as possible, which would decrease construction costs and mitigate the amount of construction material being consumed in redevelopment and being discarded in landfills.

The economic opportunities identified later in this report reflect the public input received, as most people want to see the site reused for good-paying manufacturing jobs. The strategies within this report examine and encourage repositioning possibilities that provide for a sustainable economic base with solid jobs that is responsive to changing trends and which capitalize on key regional and site assets.



PREVIOUS REGIONAL ECONOMIC DEVELOPMENT EFFORTS

Years of work by regional economic development professionals have resulted in various publications that provide analysis and recommendations for the future of the Central Wisconsin economy and the future of key industries discussed in this report. The findings discussed in these previous efforts provide a foundation for this project's analysis of economic opportunities. On the following pages, seven key efforts previously undertaken in the region are summarized, including their main goal and findings and relationship to the potential future opportunities identified for the Wisconsin Rapids Mill site.

An Assessment of the Economic Contribution of Pulp, Paper and Converting to the State of Wisconsin.

In 2018, the Wisconsin Economic Development Corporation published a study with the primary purpose of reporting on the current state of Wisconsin's pulp, paper, and converting industries. In 2018, Wisconsin's pulp, paper, and converting industries generated \$18.16 billion in economic output and employed 30,262 workers. Overall, the paper industry is the fifth-largest manufacturing sector in Wisconsin. Twenty-four paper companies operated mills at 34 locations in Wisconsin as of the writing of the 2018 report. In addition, at least 204 conversion facilities operate in the state.

Despite continued industry strength and leadership in the nation, the Wisconsin paper industry has seen substantial areas of decline and job loss in the past decade. The WEDC report asserts that while declines have occurred and threats exist, much of the industry consolidation and mill closure activity driven by declining paper demand has already taken place. As the effects of consolidation continue, some sectors are seeing growth, and operations may be able to reposition themselves to survive.

The report identifies opportunities for growth including increased demand for packing materials, driven by the surge in e-commerce and the related demand for shipment packaging (often referred to as the "Amazon effect"). In addition, other specialty papers exhibit growth potential such as coated and or laminated materials that can compete with plastic are seen as more sustainable and environmentally sound. Tissue and towel are also seen as stable segments of the Wisconsin paper industry and are expected to grow at roughly GDP levels.

While restarting the mill as a traditional or exclusive pulp and paper manufacturing site is unlikely given industry challenges and evolutions discussed above, the study identifies several other related paper products with increasing demand that potentially could be produced on a portion of the Mill site.



The Future of Wisconsin's Forest Products Economy: Summary of Focus Group Discussions.

In May 2021, the Council on Forestry held a series of two listening sessions to develop actionable initiatives regarding the future of Wisconsin's forest industry during a Regional Economic Diversification Summit (REDS). During the listening sessions, a cross-sector group of landowners and forestry stakeholders from the industry, community, education, government, environmental groups, and nonprofits met and discussed various issues concerning the industry.

Focus groups identified trends that are working well in Wisconsin's forest industry including a long history of forestry and availability of resources in Wisconsin, availability of infrastructure and equipment for the forest industry, availability of markets for certain forest products, sustainable forest management programs, and collaborations within the industry and between the state and industry.

Focus groups also identified challenges facing the forest industry, including lack of investments, limited markets for some forest products, attracting and retaining workforce, and barriers associated with high costs and limited transportation.

Regarding opportunities for growth, focus groups noted potential for increased engagement of communities and cooperatives with their forest industries, identifying new markets for the forest industry, furthering specialty products and products with increasing demand, and replacing plastic with paper products.

Finally, the report contains a series of recommendations. Under product recommendations, the report encourages diversification and upgrading production and product types and following market trends to remain competitive. Regarding transportation and infrastructure, the report recommends investing in transportation and infrastructure improvements, providing high speed internet, building more concentration yards, and creating shorter hauls.

These findings relate to proposed economic opportunities described later in this report for the Wisconsin Rapids Mill site, in that markets for expanded forest product production are recognized, as well as a need to capitalize on the site's transportation and infrastructure potential. Additionally, the above report finds many continued strengths in the broader Wisconsin forest industry, supporting biomass-focused opportunities.





Pre-Feasibility Study for a Pulpwood-Using Facility Siting in the State of Wisconsin.

In 2020, the Wisconsin Wood Marketing Team lead a pre-feasibility study for the potential to site a new pulpwood-using facility within the State of Wisconsin. The study's goal was to identify the opportunity for expansion of manufacturing capacity in Wisconsin that can sustainability utilize pulpwood resources. The report asserts confidence that the resiliency and interconnectivity of the state's forest industry make Wisconsin an ideal location to expand. Further, the report identifies opportunity for increased utilization of both the hardwood and softwood resource across the state. For example, the volume of surplus timber statewide in 2019 was 207 million cubic feet. Most of the surplus timber is in the north and central parts of the state. The potential for siting a pulpwood facility is directly translated into a potential opportunity for the Wisconsin Rapids Mill site within this report.

Wood County Rural Economic Development Plan.

With an aging and decreasing population, the Wood County faces the challenge of having an adequate workforce available to meet future demand, which will also affect quality of life. In response, the Wood County Rural Economic Development Initiative (REDI) was developed to enhance the economic vitality of the County by projecting future needs, identifying strengths, and addressing some of the existing barriers. The Wood County REDI team focused its discussions on themes associated with quality of place and on economic development themes and produced a "Rural Economic Development Plan" in March 2021. The identified focus initiatives include:

- Ensuring robust technology infrastructure exists throughout the County.
- Developing a plan to address the housing needs throughout the County.
- Producing a branding strategy.
- Supporting Central Place initiatives to provide a site that promotes arts, cultural assets, and entertainment.
- Developing a combined countywide outdoor recreational trail/boat access/beach map to increase use and attract tourists and new residents.
- Establishing an entrepreneurial "ecosystem".
- Creating a collaborative economic development group.

The Wood County REDI Plan findings show that implementation of any potential economic opportunities identified will require strategic implementation to recruit, train, and retain an appropriate workforce. Accordingly, it is unlikely that any one site reuse or one operation will replace all of the approximately 900 former jobs that existed with the former paper mill operations.



Regional Economic Growth Initiative (REGI) Competitive Asset Assessment.

The Regional Economic Growth Initiative (REGI) was established as a non-profit economic development organization backed by public, private and non-profit investors from Wood and northern Adams counties. Two of the public sectors investors included Wood County and the City of Wisconsin Rapids. In 2015, a Competitive Asset Assessment was completed as part of the REGI efforts. The Assessment was completed by Diane Lupke & Associates and was sponsored by the WEDC. The purpose of the Assessment was to review the assets in the two counties and evaluate their capacity to support and sustain economic growth and recovery.

Key findings of the REGI report note that population is stagnant and aging, wages are flat but comparable across industry sectors, and consumer spending is conservative and well below the national average. The high school graduation rate is very high from quality schools; however, the college graduation ratio is significantly below the national average, which will negatively impact the location decision of headquarters locations. Additionally, the REGI report finds the area has extremely high concentrations of employment and intellectual capital in three key areas: paper/cellulosic technologies, agriculture (specifically cranberries and potatoes), and healthcare. The report asserts that economic capacity of these industries is sufficient to support innovation, growth, and employment in the region.

The findings of the REGI Assessment provide a supporting foundation for the economic opportunities identified in this report, particularly the identified strength and growth potential in paper and cellulosic technologies and agriculture. Potential economic opportunities are largely based in biomass industries, which include cellulosic technologies as well as in value-added products from the agricultural industry.

Comprehensive Economic Development Strategy for the North Central Wisconsin Regional Planning Commission.

The 2021 Comprehensive Economic Development Strategy (CEDS) for the North Central Wisconsin Regional Planning Commission (NCWRPC) provides baseline information on demographics and economic data, development of strategies, and identification of potential projects within the region. The CEDS report notes that manufacturing is the largest employment sector within the region. Between 2010 and 2020, this sector saw a 17% increase in jobs. However, the region has experienced considerable losses in one of the top manufacturing sub-industries – paper and packaging products – with regional paper mills such as the Domtar Paper Mill in Port Edwards, Wausau Paper in Brokaw, and Verso Paper in Wisconsin Rapids recently shutting down. The report identifies a “Recovery strategy related to the closed paper mill” as a critical priority project for the region. The potential economic opportunities identified in this report continue build on the manufacturing employment sector and advances recovery of the Mill site for the region.

Centergy Regional Marketing and Economic Development Initiatives.

Centergy, the Central Wisconsin Alliance for Economic Development, serves as the region’s marketing and economic development organization and has identified the region as being a strong driver of economic activity due to a healthy inflow of employees. Additionally, the region provides substantial workforce that outflows as residents commute elsewhere for work. Recognizing a strong workforce and healthy history of certain industries, Centergy identified a core group of industry sectors well-suited for the region. Specifically, these industries include (1) Business, Finance & Tech, (2) Entrepreneurism/Retail, (3) Ag, Food & Beverage, (4) Healthcare/Bio, and (5) Manufacturing & Metals. Opportunities identified in this report are rooted in well-recognized foundational industries for the region as supported by ongoing Centergy publications and initiatives.



WISCONSIN RAPIDS
RECOVERY AND REUSE PLAN

ECONOMIC
OPPORTUNITIES



ECONOMIC OPPORTUNITIES

The following strategies align identified economic opportunities with community needs that focus on diverse uses and industry sectors that will be sustainable over the long term, and industry sectors that can most readily redeploy existing assets, supply chains, and workforce. These strategies were identified after thorough market assessment including review of economic and workforce impacts of the Mill closure, previous planning studies, and direct engagement with stakeholders and biomass industry experts.

These opportunities are based on broad potential for market implementation. Each individual opportunity is intended to communicate a possibility and may lead to similar versions of additional ideas upon further discussion and implementation. In addition, these identified opportunities could work in concert with one another depending on implementation and scale and are not to be portrayed as exclusive of each other. Further, the ideas presented may be used as foundations for a more diverse, future economic base for Wisconsin Rapids, Wood County, and the greater region. While the focus of this project is primarily the productive reuse of the Wisconsin Rapids Mill site, these opportunities can be implemented throughout the region.

Under the current ownership by Billerud, future plans are unknown. The viability of any or all of these opportunities and how they are implemented will be determined, in part, by Billerud's next steps and what portions of the Mill site they may retain or sell.

ECONOMIC OPPORTUNITIES IDENTIFICATION

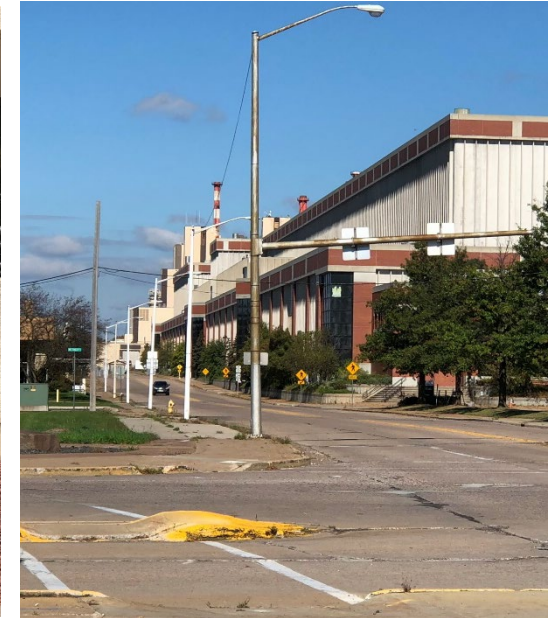
Opportunity #1: Emerging Forest Products Production

Opportunity #2: Industrial and Logistics Park

Opportunity #3: Renewable Energy Park

Opportunity #4: Pulp Facility

Opportunity #5: Value-Added Agricultural Production



OPPORTUNITY #1: EMERGING FOREST PRODUCTS PRODUCTION

There is a growing demand for sustainably produced products to replace those historically made from petroleum products. These include plastics, packaging, fuels, textiles, feed supplements, fertilizer, and filters, to name just a few. The one thing all of these have in common is that they can be produced from the same timber feedstock historically used by the Mill, and many start with the same processing and pulping process used to make paper. This booming trend has been acknowledged in various reports concerning the paper industry including the Wisconsin Wood Marketing Team's REDS study, and WEDC's 2018 report regarding the state of the industry. Being aware of in-demand products, increased customer willingness to use paper over plastic, and kraft-pulp for packaging and packages are viewed as potential factors to consider in creating and amplifying this opportunity. Site reuse could feature any combination of emerging product producers such as those further described below.

Cellulosic Food Packaging

Consumers and brand owners are demanding more sustainable solutions that reduce their impact on the environment. For example, the Alhstrom-Munksjo paper mill (a global corporation with production locations in Central Wisconsin), is forwarding a "from Plastic to Purpose" campaign aimed at raising awareness regarding the possibility of fiber-based solutions as a renewable packaging option. Applications from this campaign feature sustainable straw papers, compostable tray materials, transparent flexible packaging papers, PFAS-free grease-resistant papers, confectionary papers and more.

Exterior Building Products

The Natural Resources Research Institute located in Duluth, Minnesota, is advancing innovations in thermally treated timber. This chemical-free process modifies wood cell walls, destroys some hemicellulose, and removes water absorption properties from hardwoods and softwoods. The resulting product has less moisture content, increased decay resistance, increased dimensional stability, and has applications in external architectural cladding and building materials.

Structural Building Material

Manufacturers like Timbatec and TimberHP are advancing products with substantial opportunity for reducing embodied carbon. Concrete is the top building material with potential for reducing embodied carbon. Timbatec and others focus on structural mass timber opportunities to replace concrete construction. Insulation presents the greatest opportunity for carbon reduction after concrete. TimberHP is advancing products in wood fiber-based insulation to replace traditional materials like fiberglass, mineral wool, spray foam, and XPS foam.

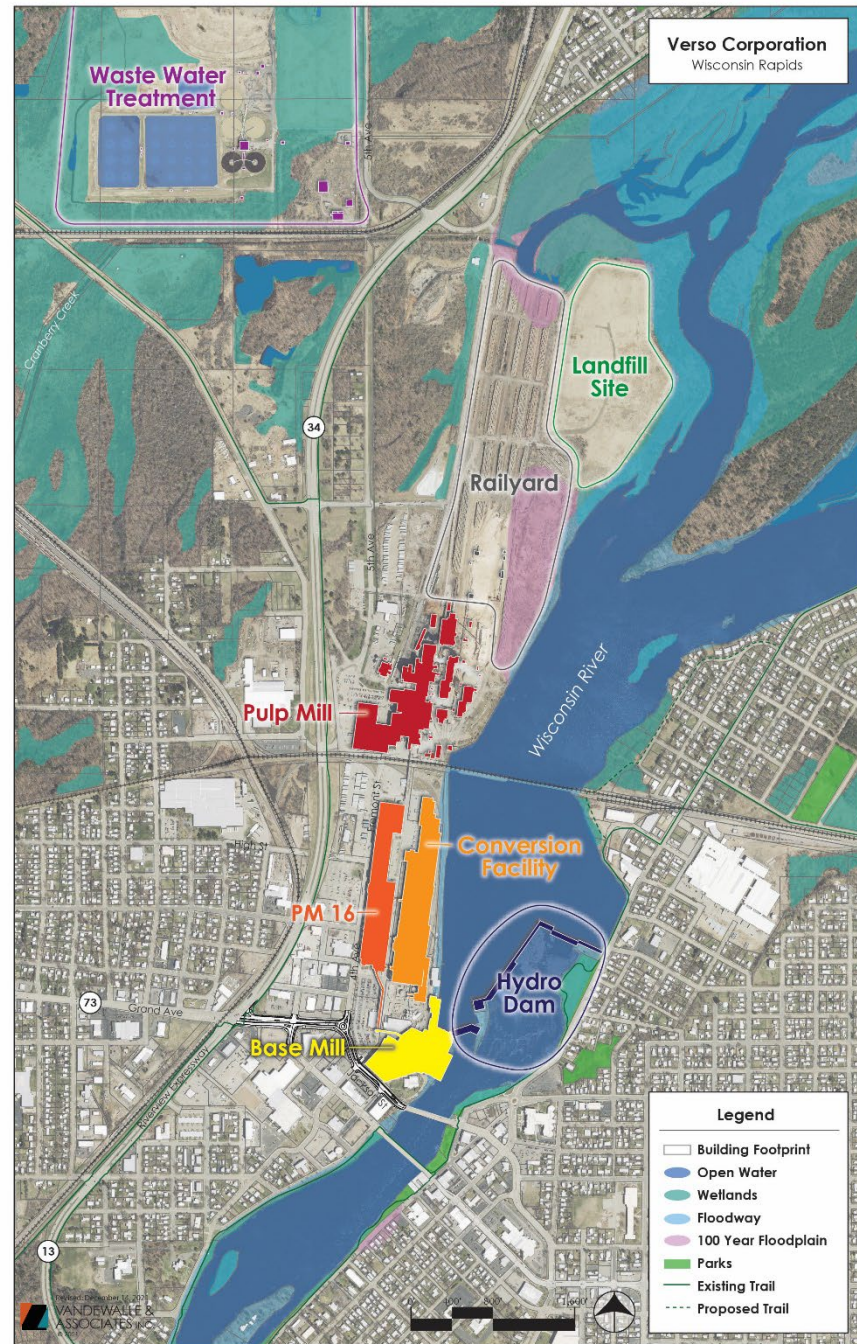
Bio-Fuels Production

Creating ethanol from cellulosic biomaterials has long been the "holy grail" of biofuels development, but it has been a struggle to develop processes that are efficient enough to be economically viable. However, new research and new processes are quickly emerging, pilot-scale projects are being built, and some of the nation's largest energy companies and fuel refiners are investing in cellulosic ethanol technologies.

OPPORTUNITY #2: INDUSTRIAL AND LOGISTICS PARK

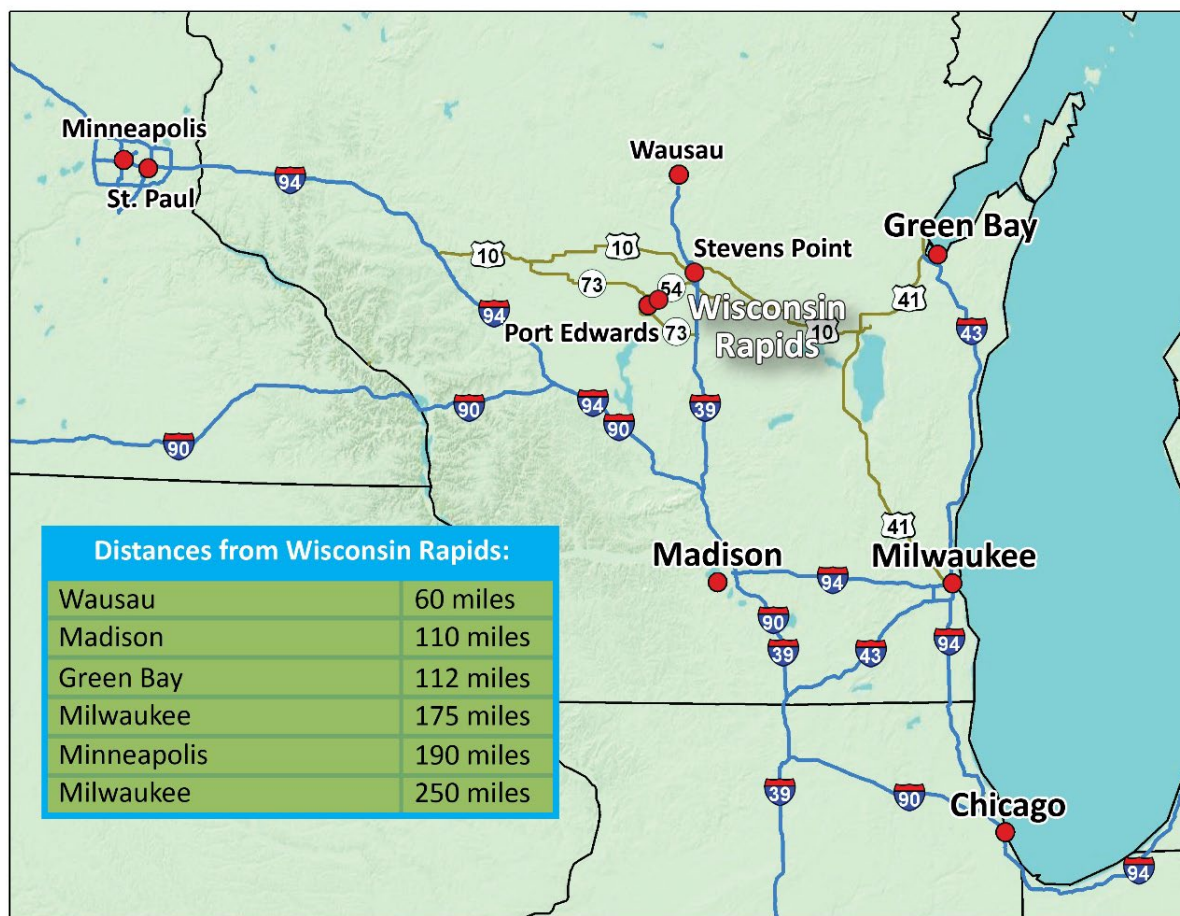
The Mill site has ample opportunity for evolution towards a leading-edge industrial park, offering unparalleled access to a diverse mix of raw materials, key infrastructure, highly skilled workforce, and existing facilities well suited to new and productive uses. The Mill site assets include six main facilities including the Wastewater Treatment Plant, the Pulp Mill, PM 16 Building, Converting Facility, and Base Mill. Aside from these main bio-mass processing facilities, numerous surplus buildings and vacant parcels exist on the site, presenting an opportunity for new light industrial businesses and new employment.

Many of the existing buildings at the Wisconsin Rapids Mills site are ideally suited for industrial reuse. The Base Mill is already being reused and is occupied by Sonoco which manufactures recycled cardboard products. Warehousing uses provide a short-term opportunity to acquire buildings and generate revenue by leasing space to regional companies needing high-quality storage facilities. The region currently has a shortage of high-quality, climate-controlled storage space and available warehouse space at this site could quickly be reused to help fill this demand.



Furthermore, the Central Wisconsin region has a long history of strong manufacturing industry and sub-sectors that could be further explored at the Wisconsin Rapids mill site. For example, precision machining and manufacturing, particularly when it comes to specialty work with materials such as stainless steel, is a growing sub-sector. The expertise grew from supporting the needs of the state's dairy farms, dairy product operations, and breweries. Today, local companies are transferring

those skills to the needs of manufactures, auto component makers, and machining companies. Key regional assets offer resources to support the success and growth of local manufacturers. For example, transportation infrastructure puts manufacturers within a day's truck drive of much of North America, and rail connectivity delivers parts and finished products throughout the continent and to Atlantic and Pacific Ports.



OPPORTUNITY #3: RENEWABLE ENERGY PARK

Biomass Gasification System

Because the community was built around its sawmill and then its pulp and paper mill, Wisconsin Rapids has an intact network of suppliers, a stockpile of wood handling and processing equipment, and deep local expertise in fields related to breaking down and using wood. There are a number of current and future technologies that the Mill could implement for energy production including bio-digestion, gasification, and/or pyrolysis. These processes can be used to generate a biogas that is equivalent to natural gas. A gasification system could be designed to utilize some of the Mill's wood handling equipment on site, as well as waste wood material from paper mills that continue to operate close-by including Biron, Nekoosa, and Stevens Point, to generate a biogas that could feed new production uses on site or in the area.

Hydroelectric Power

In addition to these renewable energy opportunities, the Mill site already generates carbon-neutral electricity. The on-site hydro dam is an existing, place-based energy resource that is generating clean, renewable, and reliable power. The existing hydro power gives this site an inherent advantage as a location for a green power business/industrial park and creates a unique opportunity to collocate new and old renewable energy systems. It also is attractive to high energy using facilities such as data centers. Highlighting and marketing the availability of carbon-neutral and highly reliable electricity could strengthen the City's ability to attract companies interested in clean, off-grid power and would integrate nicely with the other potential renewable energy opportunities.

Solar

The site's Hunter Island Landfill provides a large, flat area with limited potential for other reuse opportunities. At over 40 acres in size, the landfill site provides a feasible option for siting a large-scale solar field that could produce solar energy for reuse on site. A large flat area also presents a solar opportunity around the wastewater treatment plant.

ESRI Mapping Software provides a nationwide data layer that analyzes solar potential based on U.S. Census tract, with estimated solar energy capacity in annual kilowatt hours. According to this data set, the estimated solar output of the Hunter's Island Landfill is 1406 annual kWh per KW of installed capacity. The area immediately north of the old wastewater plant has also been identified as viable for solar reuse, with an estimated solar output of 1412 kWh per KW of installed capacity. An accepted benchmark for good solar yield is within the range of 1,000 to over 2,000 kWh/kWp.^{vii}

Hydrogen

Hydrogen, the most abundant element in the universe, may hold the key to a future of abundant clean energy. Investments in the development of a robust clean hydrogen market, supply chain, and workforce can create good-paying jobs, expand economic opportunity, promote energy independence, and improve public health outcomes.

New regional and national attention is focusing on hydrogen innovations including the Midwestern Hydrogen Coalition of seven upper Midwest states including Wisconsin. These efforts are being powered by rising costs of fossil fuels, the push to decarbonize the Earth's atmosphere, and the need for industry and governments worldwide to reduce dependence on foreign oil.

Historic processes of isolating and using hydrogen produce substantial amounts of carbon dioxide, earning the name "grey hydrogen". Energy researchers are focusing today on production of "green hydrogen" at a

price that would rival the carbon-dirty grey hydrogen with goals of storing it, transporting it, and using it to safely power the world.

Those poised to be early adopters of green hydrogen produced in mass amounts are key Wisconsin industries like marine shipping, makers of heavy-duty trucks, construction, and mining vehicles, those that use high-temperature process heating, steelmaking, cement production, chemical production, agriculture, and aviation. Additionally, Hydrogen can also be used to fuel personal vehicles as an alternative to the lack of lithium batteries for electric vehicles.

The Wisconsin Rapids site is well-suited for further hydrogen development consideration given the availability of feedstocks and truck and rail to manage it.

Synergistic Co-location

The Wisconsin Rapids Mill site's potential for on-site green power combined with emerging regional economic clusters creates an exciting opportunity to co-locate complementary uses within a green, Combined Heat & Power district. For example, the region's rapidly growing cranberry industry has shown an interest in the market value of locating a processing facility on a site powered by on-site green sources. A production facility which generates substantial amounts of heat can capture heat waste and convert it as a value-added input into other uses.

2022 Inflation Reduction Act

The 2022 Federal Inflation Reduction Act has potential to support implementation of energy related economic opportunities for energy efficiency and renewable energy. According to the U.S. Department of

Treasury, the Act is expected to drive investment and dynamic economic growth while building a clean energy economy. Implementation includes \$270 billion in tax incentives as part of the overall \$369 billion the Act dedicates to combating climate change. As just two examples, potential programs include an extended Investment Tax Credit for qualifying investments in wind, solar, energy storage, and other renewable energy projects and a Production Tax Credit to provide a credit for electricity generated from qualified renewable energy sources.



OPPORTUNITY #4: PULP FACILITY

The Wisconsin Wood Marketing Team released a pre-feasibility report in 2020 which studied the opportunity for expansion of pulpwood manufacturing in Wisconsin. The report asserts confidence that the resiliency and interconnectivity of the state's forest industry make Wisconsin an ideal location to expand. Furthermore, the report identifies opportunity for increased utilization of both the hardwood and softwood resources across the state. For example, the volume of surplus timber statewide in 2019 was 207 million cubic feet. Most of the surplus timber is in the north and central parts of the state.

All of the pulp currently produced in the state is used on-site at integrated paper mills or sold within the mill ownership to Wisconsin sites that utilize the pulp. Very little Wisconsin produced pulp is sold outside of company ownerships. There is currently not enough pulp produced in the state to meet the demand of its paper mills, and Wisconsin was forced to import \$401.6 million of wood pulp in 2018.

In addition to demand for pulp, there is demonstrated market for wood composite panel products. There are currently two structural wood composite panel mills in Wisconsin, but there is only one *non-structural* wood composite mill operating in the state. That company utilizes all of its own product in their operations, meaning that all other non-structural wood composite panels used by value-added manufacturers are currently imported.

With demand for a non-integrated pulp mill and specifically non-structural wood composite panel mill, the Rapids mill site could likely accommodate one or both facilities based on the estimated siting

requirements for such facilities. A pulp mill would require about 150 acres while a non-structural composite panel mill requires approximately 300 additional acres.

A potential symbiotic relationship could exist between a pulp facility occupying part of the site coupled with new producers that occupy the site from the identified emerging forest industry products opportunity. Many of these products depend on or start with pulp. If a pulp facility was located onsite, this would be a potential draw to these producers to access pulp without trucking costs to import it.

Wood industry clusters feature facilities that complement each other, such as utilizing the residue from one facility for the raw material in the next one's process. Possibilities such as co-generation, scragg or chip-n-saw sawmills, a sawmill specializing in over-sized logs, mulch production, and pallet manufacturing for finished product shipping could be considered for this type of wood industry cluster.

Additionally, an on-site pulp mill presents an ability to purchase smaller quantities of pulp for specialized products which may be more difficult to access on the open market. While the pre-feasibility study focused on common industries that use pulpwood (pulp and paper industry and wood composite panel industry), new technologies or rapidly expanding markets might bring about new industries that utilize pulpwood. Overall, there is both the market demand generated by Wisconsin's value-added forest products industry for packaging and wood composite panels, and the available pulpwood resources.

OPPORTUNITY #5: VALUE-ADDED AGRICULTURAL PRODUCTION

Central Wisconsin has been home to extensive agricultural activity since its earliest days. Today, the regional agricultural industry supports international food and beverage leaders, among them Kraft Foods, Ocean Spray, Del Monte, and Foremost Farms. Regional farms grow much of the nation's cranberries, apples, strawberries, potatoes, peas, cabbage, and snap beans.

The region's agricultural history provides a competitive advantage for expansion of emerging markets and innovation. Hydrogen production advances in this region can capitalize on the second largest market for hydrogen, which is ammonia production as an input to Midwestern agricultural production. There is an established market and distribution/storage network for ammonia, arguably the most extensive hydrogen distribution network in the country.

With the Wisconsin Rapids Mill site being well-suited for biomass processing, opportunities exist in converting agricultural surplus or waste into value-added products for other industries. The region produces substantial amounts of potatoes and cranberries, as well as dairy products relying on corn as feedstock for dairy herds. Potato processing generates waste in the form of peels, pulp, and rejects. The waste and unmarketable potatoes can be further processed in starch plants and incorporated into animal feed formulations or turned into ethanol. Corn stover (consisting of the leaves, stalks, and cobs of corn left in the field after harvest), can also be upcycled into animal feeds, bedding, soil amendments, bioplastics, and for biomass ethanol. Cranberry pomace, a by-product of the juicing process, may be extruded to produce a range of polyphenol-rich ingredients for use in supplements. Cranberry waste has also been considered for production of cellulosic ethanol.



WISCONSIN RAPIDS
RECOVERY AND REUSE PLAN

APPENDIX



APPENDIX

A. SURVEY SUMMARY

B. INDUSTRY AND WORKFORCE DATA REPORT

C. FOREST INDUSTRIES OF THE FUTURE SYMPOSIUM DETAILED SUMMARY

D. EMERGING TRENDS IN THE FOREST PRODUCTS INDUSTRY SUPPORTING SOURCES

E. SUPPORTING ECONOMIC ANALYSIS REPORTS BY REFERENCE

1. An Assessment of the Economic Contribution of Pulp, Paper and Converting to the State of Wisconsin. Prepare for the Wisconsin Economic Development Corporation by the Wisconsin Institute for Sustainable Technology. August 5, 2019. (Wisconsin Institute for Sustainable Technology College of Natural Resources University of Wisconsin - Stevens Point, Wisconsin Paper Council, WEDC).
2. The Future of Wisconsin's Forest Products Economy – Summary of Focus Group Discussions. A Report for the Wisconsin Council on Forestry. February 2022. UW-Extension, WEDC, Wisconsin Council on Forestry, Wisconsin Department of Natural Resources. (REDS – Regional Economic Diversification Summit)
3. Pre-Feasibility Study for a Pulpwood-Using Facility Siting in the State of Wisconsin. Wisconsin Wood Marketing Team. July 31, 2020. Funded by State of Wisconsin and U.S. Forest Service Wood Innovations.
4. Wood County Rural Economic Development Plan, March 2021. (Rural Economic Development Initiative (REDI) Plan, Wood County, Wisconsin, April 2021).
5. Regional Economic Growth Initiative (REGI) Competitive Asset Assessment, 2015. Diane Lupke & Associates with WEDC.
6. Comprehensive Economic Development Strategy (CEDS) for the North Central Wisconsin Regional Planning Commission, 2021.
7. Centergy Regional Marketing and Economic Development Initiatives.

EXHIBITS

EXHIBIT #1: SITE OWNERSHIP MAP

Verso Paper Mill Ownership Map

Primary Owner Name

- CONSOLIDATED PAPERS INC
- CONSOLIDATED WATER POWER CO
- CORENSO NORTH AMERICA CORP
- NEWPAGE WISCONSIN SYSTEMS
- ND PAPER INC

Municipal Boundaries
0.25 Miles



Date: 12/14/2021 Data Sources: FEMA, DNR, Wood County

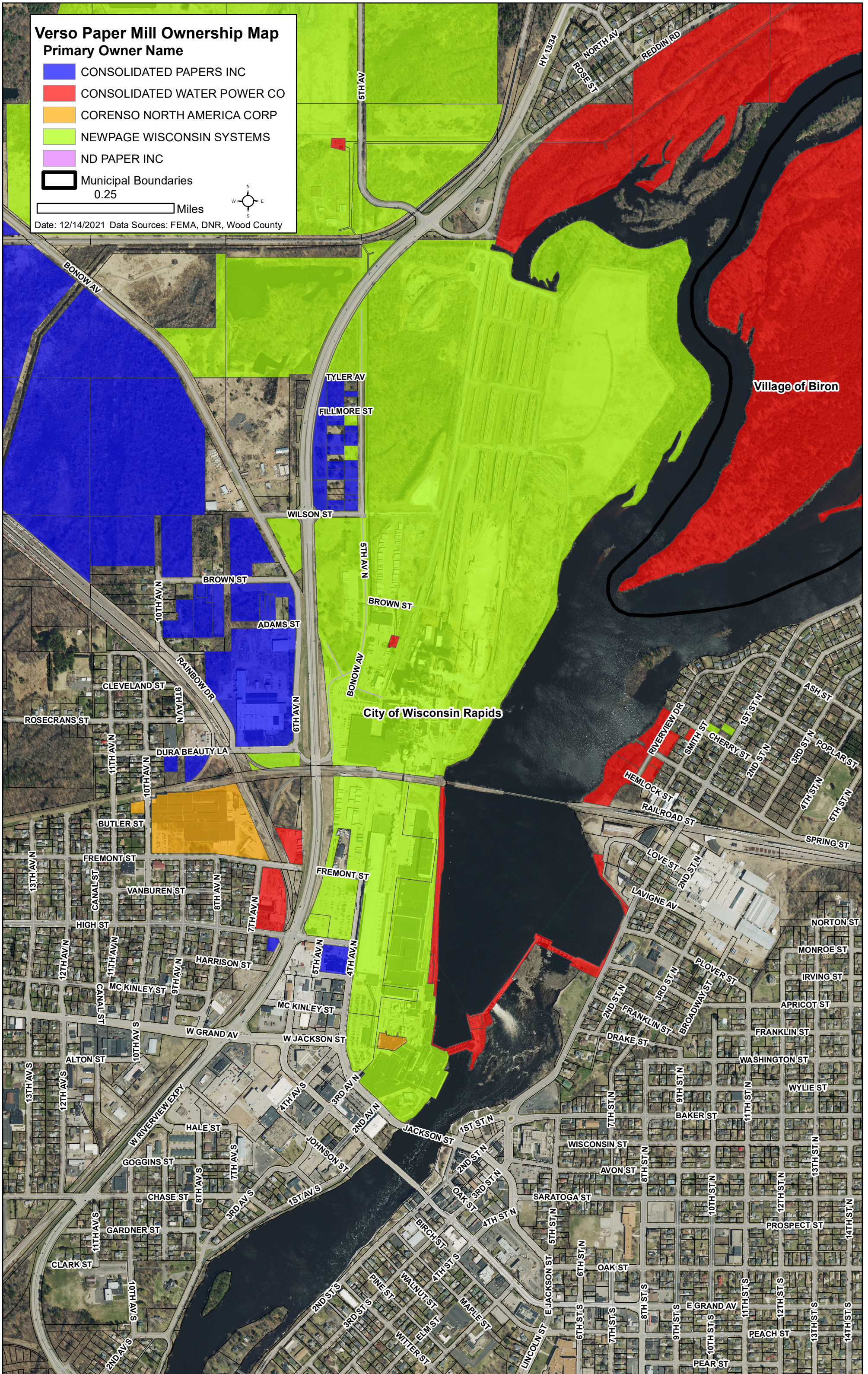
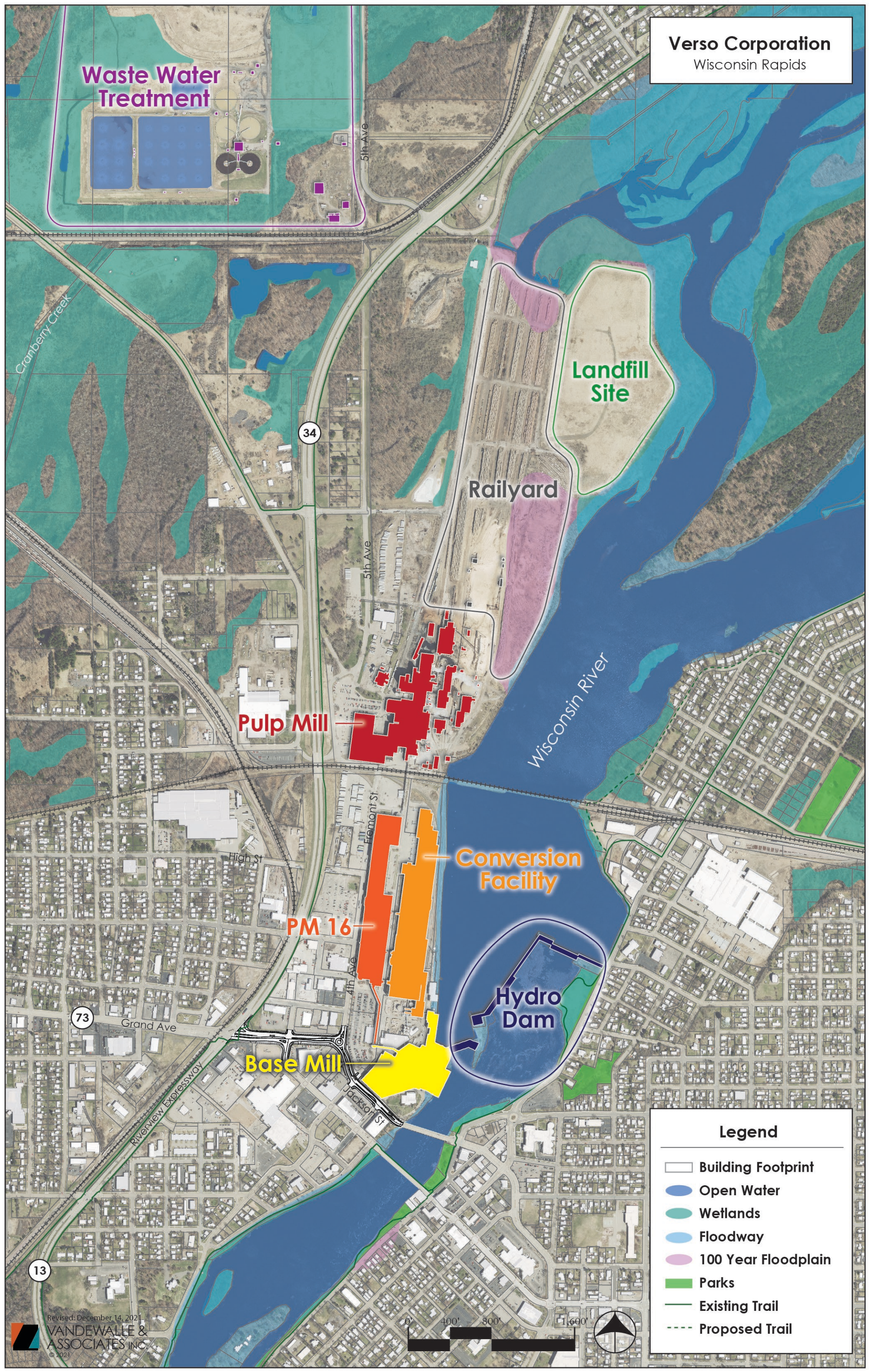


EXHIBIT #2: SITE COMPONENTS MAP



Waste Water Treatment

Landfill Site

Railyard

Pulp Mill

Conversion Facility

PM 16

Hydro Dam

Base Mill

Legend

- Building Footprint
- Open Water
- Wetlands
- Floodway
- 100 Year Floodplain
- Parks
- Existing Trail
- Proposed Trail

ⁱ An Assessment of the Economic Contribution of Pulp, Paper and Converting to the State of Wisconsin, WEDC, August 5, 2019.

ⁱⁱ <https://www.mckinsey.com/industries/paper-forest-products-and-packaging/our-insights/perspectives-on-paper-and-forest-products-in-2022-how-can-ceos-navigate-todays-era-of-transformational-change>

ⁱⁱⁱ <https://www.mckinsey.com/industries/paper-forest-products-and-packaging/our-insights/perspectives-on-paper-and-forest-products-in-2022-how-can-ceos-navigate-todays-era-of-transformational-change>

^{iv} <https://www.mckinsey.com/industries/paper-forest-products-and-packaging/our-insights/perspectives-on-paper-and-forest-products-in-2022-how-can-ceos-navigate-todays-era-of-transformational-change>

^v <https://woodtech.events/lignin-based-resin-developed-for-plywood/>

^{vi} P. 14, section 6.1: https://unece.org/sites/default/files/2022-05/unece-fao-sp-51-main-report-forest-sector-outlook_0.pdf

^{vii} <https://www.solarpowerworldonline.com/2017/08/specific-yield-overview/>

APPENDIX A:

Wisconsin Rapids Recovery & Redevelopment Plan

Public Online Survey Summary

Introduction

The Wisconsin Rapids Recovery and Redevelopment Plan project team has implemented a number of public engagement opportunities over the course of the planning process. A public meeting was held on June 1, 2022 to gain input on community priorities and desires for future development, which will help inform the Site Vision and Redevelopment and Reuse Program for the former Verso Paper Mill Site. There were eleven registered attendees at the meeting, that worked in three small groups to provide input on the Community Priorities.

To engage more citizens in the planning process and obtain additional public feedback, the public engagement materials were converted into an online survey available to the public. As of the closing of the survey on September 9, 2022, 618 total participants completed the survey and provided their input along with an additional 20 written responses collected. The following contains a summary of the survey results.

Demographic Composition of Survey Respondents

Of the 638 respondents, 428 (67%) live in Wisconsin Rapids. A total of 108, or 17% of total respondents indicated that they live within 0.5 miles of the former Verso Paper Mill site. Of the 23% of respondents who indicated that they do not live within the community, many indicated that they live in nearby municipalities, most predominantly the Town of Grand Rapids, City of Nekoosa, and City of Port Edwards.

Survey results indicate that the majority of respondents that engaged with the survey are longtime Wisconsin Rapids residents and generally represent an older segment of the population. Nearly 50% of all respondents (49.61%) indicated that they have lived in Wisconsin Rapids for more than 21 years. Correspondingly, nearly half of all survey participants (48.11%) fell within the age range between 30 and 49 years old, and collectively only 9% of those engaged were under 30 years of age. This indicates that young people were likely underrepresented in the survey.

The survey also indicated that 87% of respondents owned their homes and that another 12% are renters. This is important to note, as current homeowners may not perceive the need for additional housing within the community that renters within Wisconsin Rapids may see and experience.

Survey Responses: Top Priorities Selected by Participants

Ultimately, the goal of the survey was to gain an understanding of what community members view to be the top priorities in advancing the Wisconsin Rapids Recovery and Redevelopment Program. The primary survey question asked participants to rank five to seven priorities from a large list of possible goals for the redevelopment and reuse of the former Verso Paper Mill Site. Participants were asked to rank priorities based on the ability of each option to meet the needs of the community. It should be noted that of the 638 total survey participants, 417 answered this question and the remaining participants skipped it entirely.

The seven top priorities selected by survey respondents include:

- Creating new jobs (at 36.2% of respondents or 85 picks as a top priority)
- Creating opportunities to retain/expand/recruit businesses (at 35.6% of respondents or 78 picks as a top priority)
- Reusing existing facilities to the maximum extent possible (at 22.2% of respondents and 36 picks as a top priority)
- Redeveloping the properties quickly (at 23.53% of respondents and 20 picks as a top priority)

- Mitigating environmental pollution (at 21.93% of respondents and 25 picks as a top priority)
- Improving safety, reducing crime & vandalism (at 20.30% of respondents and 27 picks as a top priority)
- Enhancing long-term economic sustainability (at 19.2% of respondents and 32 picks as a top priority)

Ultimately, the survey indicates that respondents would like to see the site used to expand, retain, and attract companies to provide new jobs within Wisconsin Rapids. There is an emphasis amongst respondent priorities on environmentally responsive redevelopment, including the mitigation of environmental pollution and the reuse of existing facilities as much as possible, which would decrease construction costs and mitigate the amount of construction material being consumed in redevelopment and being discarded in landfills. Respondents emphasized the desire for the expansion and attraction of quality jobs based on the strong indicated desire to enhance long-term economic sustainability. Capitalizing on the redevelopment opportunity to diversify the community's economic base is advisable. At the same time, respondents called for the properties to be redeveloped quickly, potentially indicating the need for additional quality jobs or the fear that the site could sit underutilized and vacant if action isn't taken to redevelop in the near term.

Open-Ended Prompts: General Themes & Consensus

The final survey question provided respondents with an opportunity to provide further details about any potential priority options that were not included in the options for the previous question. Responses were quite varied, but a number of trends amongst responses exist. In total, 111 respondents chose to provide an open-ended comment response to this question. General themes from this question can be found below:

- There is a desire to focus on redevelopment that will attract quality, long-term jobs that are from diverse economic sectors to strengthen the local economic base.
- While some respondents indicated the desire for more restaurants, entertainment, and shopping within the site, many indicated that they do not feel the community needs more low-wage service industry jobs. Redevelopment should focus on attracting modern manufacturing and technology sector businesses that can provide significant long-term job security to Wisconsin Rapids residents and attract or provide opportunities for a younger workforce.
- Several responses indicated the desire to see innovative environmental technology uses at the site, from waste-to-energy production facilities, cardboard and paper recycling, and other innovative green initiatives.
- Respondents indicated that the redevelopment site should be well-planned to create a neighborhood or part of the City designed for the future by addressing the need for a more varied and diverse housing stock that can provide different types of rental and ownership options for area residents.
- There was a common theme in the desire to clean up the river and incorporate it into the community's identity and list of amenities, and the general desire to see the site become a cohesive, enticing, and active place that will draw people to it to work, play, and live.
- Amongst respondents, the need for quality jobs and the desire to see unique entertainment and recreational opportunities besides bars and drinking establishments integrated into the area appear to be two of the strongest desires of commenters. Recreational centers or opportunities for physical activities and games, shooting and archery, bicycling, indoor golf driving ranges, and other such recreational entertainment businesses were mentioned as desires on several occasions. Community gathering spaces, concert halls, and events venues and programming to attract young people to the community were also mentioned regularly throughout these responses.
- Additional responses included the desire for a reliable public transit system that would add to quality of life for residents.
- Several respondents indicated a need to focus on supporting business development and opportunities to draw small business to the area. Including adding affordable, attractive commercial properties downtown.

APPENDIX B:

WISCONSIN RAPIDS RECOVERY AND REDEVELOPMENT STRATEGY ECONOMIC SNAPSHOT AND WORKFORCE ANALYSIS

The Wisconsin Rapids Mill began as Consolidated Water Power Company in the 1890s, and changed its name to Consolidated Water Power & Paper Company in the early 1900s to include papermaking. The mill began operations with the world's first electrically powered paper machines in 1904.

The Wisconsin Rapids Mill encompasses approximately 1,000 acres and includes a pulp mill, paper mill and sheeting operation. The paper mill operates two paper machines with support from off-machine coaters, supercalenders and winders. The sheeting operation includes eight sheeters and two automated storage facilities. As of 2019, the Mill had the capacity to produce approximately 540,000 tons of paper per year. Under Verso's ownership, the mill formerly made graphic papers used in commercial printing, media and marketing applications, including magazines, catalogs, books, direct mail, corporate collateral and retail inserts and packaging papers used in point-of-purchase displays and laminated paperboard for box packaging.¹

Following numerous ownership changes and amid a shifting market for paper and paper-based specialty products, on June 9, 2020 the Verso Corporation announced the upcoming closure of its Wisconsin Rapids mill, resulting in the loss of approximately 902 jobs and other direct outputs:²

- 535,000 total tons of shipped product (93% directly to customers)
- \$566 million in total revenue (sales of coated and specialty papers, paperboard, pulp)
- \$535 million in direct operating costs
 - \$243 million in direct material inputs (wood fiber, energy, chemicals and other raw materials)
 - \$99 million in labor and benefits
 - \$96 million in fixed costs (maintenance, mill operations)
 - \$67 million in freight hauling costs
 - \$29 million in other costs (warehousing, inventory reserves, corporate and external overhead)

The above operating costs include a significant proportion of inputs from a chain of suppliers and vendors throughout the state and wider Midwest region, including over \$94 million in wood timber and fiber from Wisconsin's Northwoods, Michigan's Upper Peninsula, and other sources. Based upon the immediate local and regional economic shocks expected from the impending closure, regional officials quickly formed the *Wisconsin Rapids Together Task Force* chaired by the area's elected Assembly and Senate representatives to address the economic ramifications of the closure and possible responses.

Verso Mill Closure Impacts

To help gain insights into the economic impacts of the closure on behalf of the Task Force, a team from the UW-Extension undertook a series of analyses utilizing the IMPLAN Economic Impact Analysis Model utilizing an input-output (I-O) system, summarized in the following tables.

¹ "The Wisconsin Rapids Mill at-a-glance." Verso Corporation, 2020.

<https://legis.wisconsin.gov/rapidstogether/media/1049/wi-rapids-mill-fact-sheet.pdf>

² 2019 "base case" operating estimates for Rapids mill (Don Guay pro forma)

Regional Verso Closure Impacts*	Employment (\$MM)	Labor Income (\$MM)	Total income (\$MM)	Industry Sales (\$MM)
Direct Effect	902	\$ 71.34	\$ 98.05	\$ 434.39
Indirect Effect	557	\$ 31.96	\$ 53.05	\$ 119.29
Induced Effect	473	\$ 19.88	\$ 36.71	\$ 64.90
Total Effect	1932	\$123.18	\$187.81	\$618.58
Multiplier	2.141	1.727	1.915	1.424
Share of Regional	0.80%	1.00%	0.90%	1.40%

*Wood, Clark, Marathon, Portage, Adams, Juneau, Jackson counties

Impact on State and Local Government Revenues (\$MM)	
Sales Tax	\$ 5.36
Property Tax	\$ 5.43
Income Tax	\$ 2.72
Other	\$ 1.62
Total	\$ 15.13

Source: UW- Extension, IMPLAN

There are four measures of economic activity used in this impact analysis: (1) jobs, (2) labor income, (3) total income, and (4) total industrial sales. Jobs includes both part- and full-time jobs, not full-time equivalent. Thus, the employment impacts in consumer sectors that have a lot of part-time workers can be relatively large. Labor income includes wages, salaries (plus employer paid benefits) and proprietor income. Total income includes labor income plus all other sources of income such as transfers (e.g., social security), dividends, interest and rental income, among others. Industry sales is akin to industry revenues. For example, in 2018 (the base year for the UW model) Verso had estimated sales/revenue of about \$434.4 million. This figure is well below the internal estimate of over \$566 million in 2019 revenues cited above, suggesting the actual multiplied impacts may actually be much larger in real dollars than previously known.

There are three parts to the economic multiplier: (1) direct, (2) indirect, and (3) induced. The total economic multiplier is the sum of those three parts. The direct impact is Verso itself and it is the change in this amount that drives the economic impacts. The indirect effect is akin to business-to-business transactions, such as the purchase of electricity and raw wood products, among others. The induced effect is from labor spending wages/salaries in the regional economy.

The UWEX/IMPLAN model also provides estimates of state and local tax revenues generated by the plant and corresponding economic activity. These tax revenue estimates are simplistic and do not reflect subtleties of special property tax treatment, aids formulas, etc. When comparing the multi-county region impacts to the statewide impacts, the statewide will be larger than the multicounty region because more of the economic activity associated with Verso is captured within the state than the local regional economy. For example, Verso contracts with vendors outside of Wood County (e.g. a Milwaukee-based trucking company), that business-to-business spending would be lost to the Wood County region, but captured in the Wisconsin level analysis.³

³ "Addendum on Impact of Verso Corporation Closure of the Wisconsin Rapids Paper Mill." Division of Extension, University of Wisconsin-Madison, August 2020.
https://www.wirapids.org/uploads/1/0/3/3/103347874/impact_of_verso_closure_-_uwextension_2020-08-06.pdf

Drive Time Analysis

The Wisconsin Rapids labor shed – the geographic area from which the majority of people who work in the City – can be broadly defined in terms of distance from the City center, or for purposes of this analysis, the former Verso Mill property on the western bank of the Wisconsin River. More specifically, workers in the City travel an average of 21.5 minutes to go to work each day.⁴

Breaking the local population of residents and workers into geographic “rings” by drive time from the Verso site – 15, 30, and up to 60 minutes – demographic and workforce characteristics can be further studied. A 15-minute drive generally covers the City limits and immediate suburban areas (including Port Edwards and Nekoosa); the outer edges of Stevens Point, Marshfield, and Interstate 39 are within 30 minutes; Wausau and portions of surrounding Central Wisconsin counties can be reached within 60 minutes. This outer range of a one-hour drive time provides the limits of the City’s workshed for purposes of this analysis. (See map on the following page)

Population and Workforce Summary

The populations living within each of the three drive time areas have remained remarkably steady over the past several decades. The areas nearest the mill – generally within the City limits and immediate surroundings – is nearly unchanged over the past ten years, and marginally smaller than in the year 2000. The estimated 30 and 60-minute drive time areas have also seen little to no aggregate population growth since 2010, though individual municipalities within those areas may have seen varying levels of change.

Each of the three areas are also fairly balanced between their respective number of residents and the number of workers (i.e. jobs) located within, who are not necessarily residents. The close alignment within the 15 and 30-minute areas suggest that Wisconsin Rapids is not simply a “bedroom community” but rather a leading economic center within Wood County and Central Wisconsin more broadly.

Population Summary	15 minutes	30 minutes	60 minutes
2000 Total Population	37,021	105,055	344,209
2010 Total Population	37,309	104,949	347,142
2022 Total Population	37,161	104,937	347,373
2027 Total Population	36,988	104,954	347,037
2022-2027 Annual Rate	-0.09%	0.00%	-0.02%
2022 Total Daytime Population	34,244	102,212	353,835
Workers	15,399	50,579	186,857
Residents	18,845	51,633	166,978

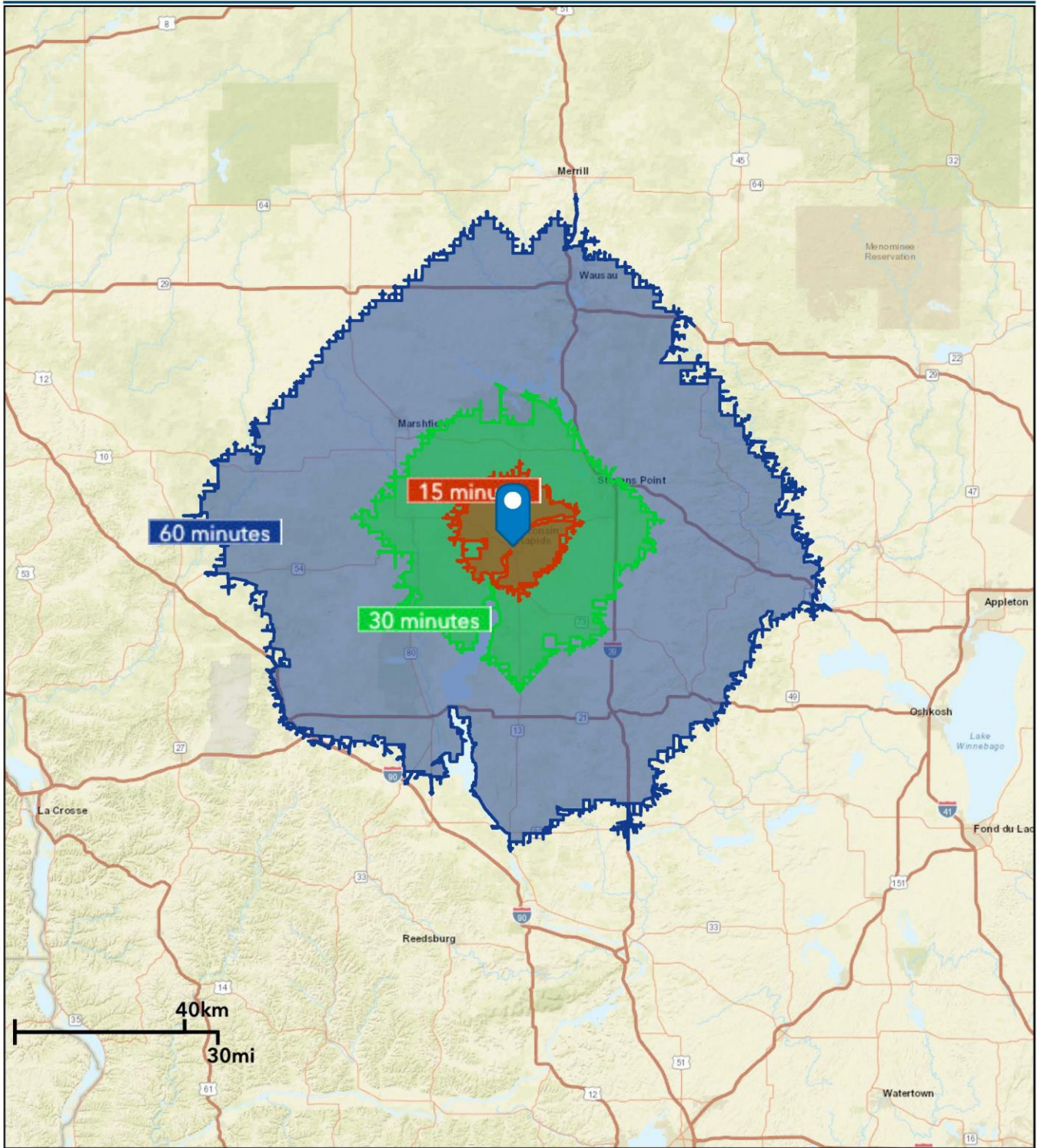
Source: ESRI Business Analyst

⁴ American Community Survey, 5-Year Estimates (2017-2021). U.S. Census Bureau.



Verso Mill - Wisconsin Rapids, WI

15-30-60 Minute Drive Times



Housing Summary

The drive time area closest to the mill property and the City has a stable housing stock, with occupancy rates and owner/renter splits that are similar to conditions coming out of the Great Recession of the late 2000s. The percentage of owner occupied homes in the 15-minute drive time area, nearly 70%, is higher than in the broader drive time areas. Vacant housing units are also far less prevalent at only about 6%, versus 11% and 16% in the broader 30 and 60-minute areas.

Housing Summary	15 minutes	30 minutes	60 minutes
2010 Housing Units	16,779	48,132	166,165
Owner Occupied	69.1%	62.8%	61.5%
Renter Occupied	24.5%	26.2%	22.5%
Vacant	6.4%	11.0%	15.9%
2022 Housing Units	17,386	49,731	169,814
Owner Occupied	67.1%	63.6%	63.3%
Renter Occupied	26.6%	26.5%	22.9%
Vacant	6.2%	9.9%	13.8%
2027 Housing Units (Est.)	17,464	50,129	170,664
Owner Occupied	67.7%	64.0%	64.0%
Renter Occupied	26.0%	26.1%	22.3%
Vacant	6.4%	9.9%	13.7%

Source: ESRI Business Analyst

The estimated 2022 median home value in the 15-minute area is about \$154,000, approximately 18-20% lower than in the 30 and 60-minute areas where larger, rural parcels and homes predominate. However, based upon tightened labor and housing markets throughout Wisconsin and the nation since the onset of the pandemic in 2020, both household incomes and home values have increased dramatically, as evidenced by the rough doubling of both metrics across all three drive time areas in the ESRI models and five-year rolling projections generated for 2021 and 2022, respectively.

Persistent price inflation for goods and services across all sectors, however, are eroding consumer sentiments and relative gains in prosperity for workers and households more broadly. Hot inflation continues to flash warning signs of a potential recession in 2023 brought on, at least in part, by federal policies designed to slow an economy “overheated” by pent-up pandemic demand and stimulus efforts during 2020-2022. While economic shocks like the Verso closure are certainly felt most acutely at the local level, it appears that macroeconomic factors are most responsible for any lingering uncertainty among both firms and households in the Wisconsin Rapids area.

Median Household Income	15 minutes	30 minutes	60 minutes
2021	\$53,512	\$54,242	\$57,807
2026	\$57,087	\$58,508	\$63,164
2021-2026 Est. Change	6.70%	7.90%	9.30%
Median Home Value			
2021	\$136,608	\$164,105	\$173,056
2026	\$154,757	\$182,521	\$203,873
2021-2026 Est. Change	13.30%	11.20%	17.80%

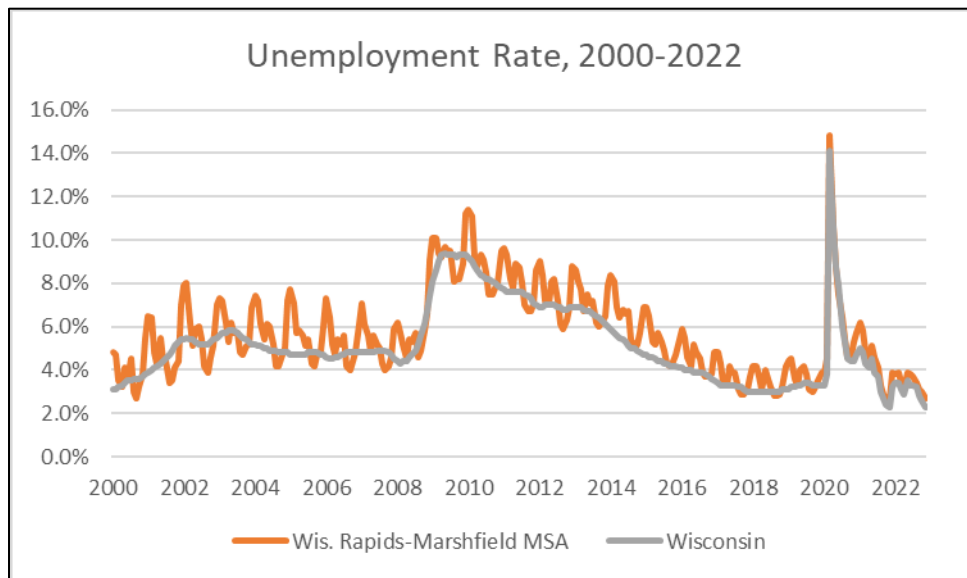
Median Household Income	15 minutes	30 minutes	60 minutes
2022	\$57,906	\$59,999	\$64,334
2027	\$66,526	\$70,575	\$75,988
2022-2027 Est. Change	14.89%	17.63%	18.11%
Median Home Value			
2022	\$153,998	\$179,568	\$188,580
2027	\$188,252	\$212,114	\$234,412
2022-2027 Est. Change	22.24%	18.12%	24.30%

Source: ESRI Business Analyst

Unemployment and Labor Force Participation

Unemployment in the Wisconsin Rapids area has generally tracked 1-1.5% higher than the state as a whole over the past 20 years (local rates are not seasonally adjusted). However, both the region and state have enjoyed historically low unemployment in recent years, having largely recovered from the Great Recession of 2008-09 and, with the exception of the nationwide unemployment spike brought on by COVID-related

closures in spring 2020, rates have generally returned to pre-pandemic levels (just 2.7% in Wisconsin Rapids and 2.3% statewide in December 2022).



Source: Bureau of Labor Statistics

While these very low rates suggest that the local and state economies are approaching full employment—the idea that more or less everyone in the labor force who wants a job has one - Wisconsin still had roughly 40,000 fewer non-farm jobs in December 2022 than it did in December 2019.⁵

Unemployment numbers typically reported by the BLS track only those who have actively searched for a job within the past four weeks, thus excluding those who've stopped searching because they've gotten discouraged by past rejections, parents who stay home because they can't afford child care, and many other reasons. The BLS does include those potential workers in a set of alternative labor statistics, but it doesn't track them at a local level and it only provides quarterly releases on a state level. Perhaps a more accurate alternative measure of the perceived national labor shortage is that in December 2022, the percent of the potential U.S. workforce that wanted a job but didn't have one, or wanted a full-time job but was only working part-time, was 6.5%.⁶

After increasing steadily in the 1970s and 1980s as many women entered the workforce, state and national participation rates have steadily declined over the past thirty years. Approximately one-third of working age adults in Wisconsin are estimated to be outside of the workforce (see chart below), though the state's participation rate has historically been about five point higher than the national average.

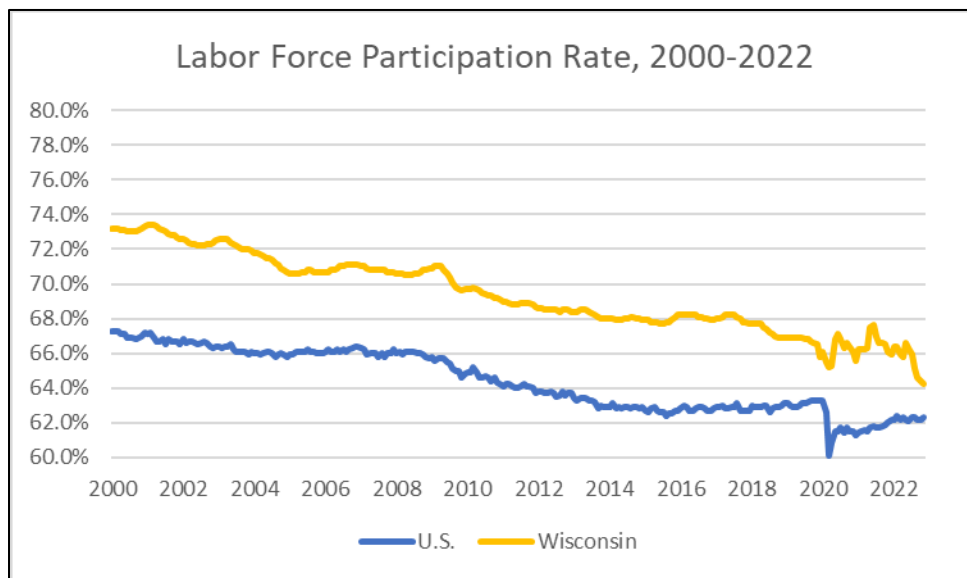
Official unemployment estimates may nonetheless remain very low in central Wisconsin and throughout the state in the coming years, as the region's working-age population is expected to stay relatively constant as natural increases (births minus deaths) and net migration largely offset. With a median age of around 39 years old, Wisconsin Rapids will need to remain a competitive destination for workers and industry in order to maintain a workforce adaptable to changing economic trends.⁷ In addition, employers will need to reconsider their strategies for attracting and retaining workers. Some businesses may move

⁵ Local Area Unemployment Statistics (LAUS), Bureau of Labor Statistics, 2019-2022. <https://www.bls.gov/lau/>

⁶ This figure includes the "total unemployed, plus all persons marginally attached to the labor force, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all persons marginally attached to the labor force. See "Alternative measures of labor underutilization," Bureau of Labor Statistics, January 6, 2023. <https://www.bls.gov/news.release/empsit.t15.htm>

⁷ American Community Survey, 5-Year Estimates (2017-2021). U.S. Census Bureau.

more quickly toward automation, using robots to get by with fewer employees. In order to grow the workforce, employers, communities and economic development organizations will need to address the factors that keep people from moving to an area or choosing to work, including a lack of childcare, affordable housing, transportation or relevant skills.⁸



Source: Economic Research Division, Federal Reserve Bank of St. Louis (FRED)

While the Central Wisconsin region has followed broader macroeconomic trend toward a greater proportion of technology and service-based employment, blue-collar jobs still make up a substantial percentage of positions (nearly 50% in the 15-minute Wisconsin Rapids area). Manufacturing employment remains strong, with nearly a quarter of local jobs within the sector in spite of shocks from closures at the Verso mill and the long-term consolidation of traditional economic base industries like paper manufacturing.

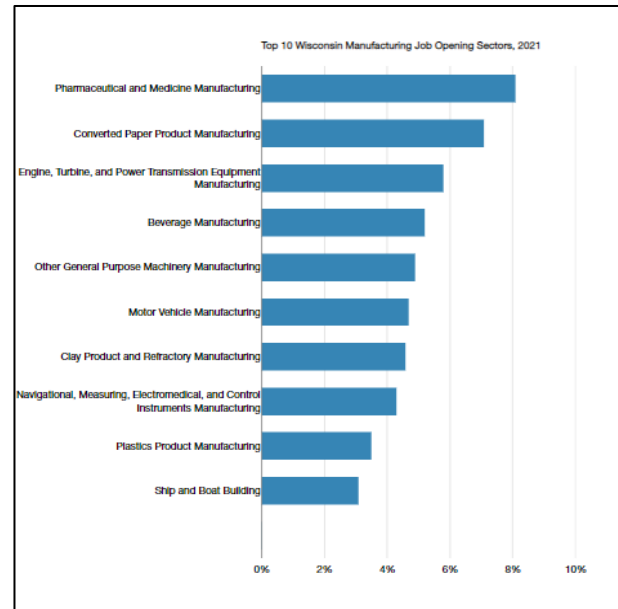
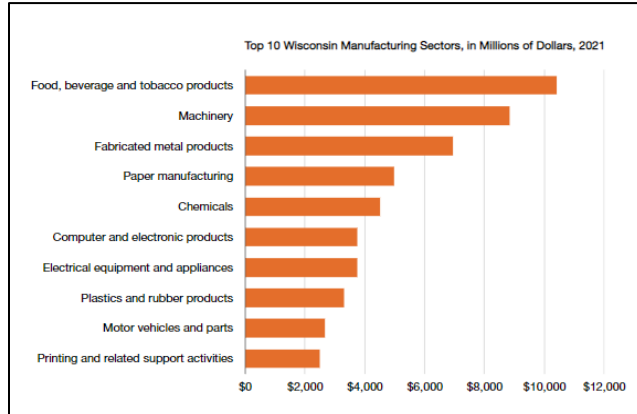
2022 Employed Population 16+ by Industry	15 minutes	30 minutes	60 minutes
Total	18,419	53,831	180,851
White Collar	50.2%	55.0%	55.5%
Blue Collar or Services	49.8%	45.0%	44.5%
Agriculture/Mining	2.0%	2.6%	3.1%
Construction	5.7%	5.5%	5.7%
Manufacturing	23.4%	17.4%	18.4%
Wholesale Trade	2.0%	1.9%	2.4%
Retail Trade	11.0%	12.0%	11.4%
Transportation/Utilities	5.9%	5.8%	6.0%
Information	2.2%	1.6%	1.1%
Finance/Insurance/Real Estate	5.8%	8.1%	7.7%
Services	39.0%	42.4%	41.0%

Source: ESRI Business Analyst

⁸Yahr, Natalie. “What does record-low unemployment mean for Wisconsin? Experts weigh in.” *Capital Times*, February 15, 2022. https://captimes.com/news/business/what-does-record-low-unemployment-mean-for-wisconsin-experts-weigh-in/article_f284a670-efe3-5d6c-b766-fd2abf0c73a2.html

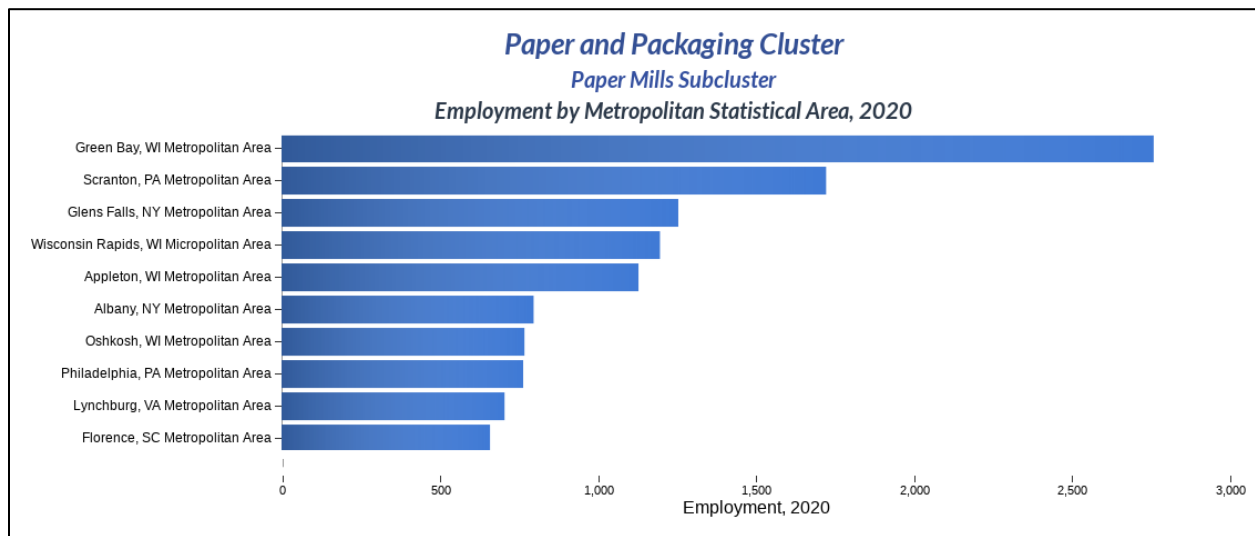
Manufacturing

Paper manufacturing in particular remains a leading source of strength for Wisconsin’s statewide economy, among its top five manufacturing sectors and the second strongest sector for manufacturing job growth in 2021.⁹



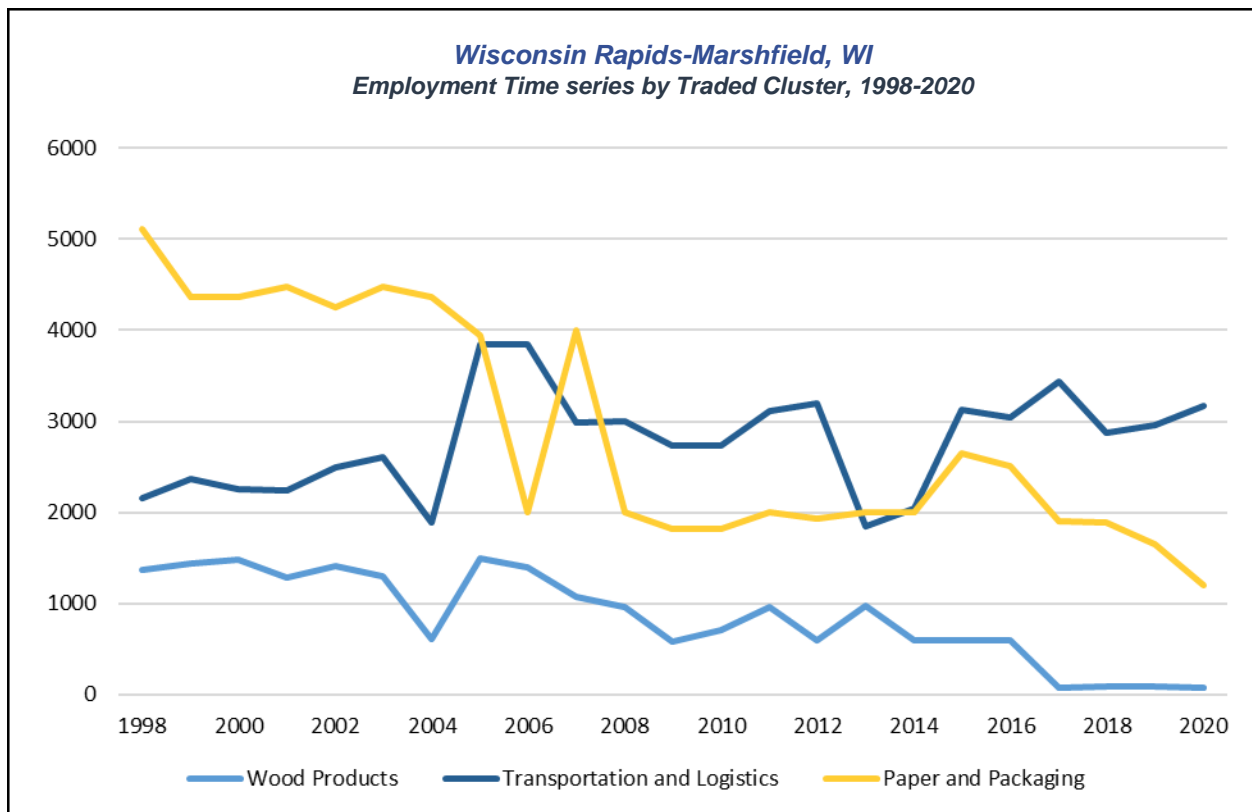
Source: National Association of Manufacturers (NAM)

However, the long-term decline of paper manufacturing employment in the Wisconsin Rapids area specifically has presaged something of an economic “retooling” for displaced workers in that industry, as paper jobs dropped from about 5,000 in 1998 to about 1,900 in 2018 and just 1,200 by 2020, dropping it from second to fourth in total papermaking employment by metro area in the nation. Nonetheless, the Wisconsin Rapids area, along with Green Bay and the Fox Cities, still largely account for Wisconsin’s continuing status as the largest state-level concentration of papermaking employment in the U.S..



Source: U.S. Cluster Mapping Project

⁹ “2021 Wisconsin Manufacturing Facts,” National Association of Manufacturers. <https://www.nam.org/state-manufacturing-data/2021-wisconsin-manufacturing-facts/>



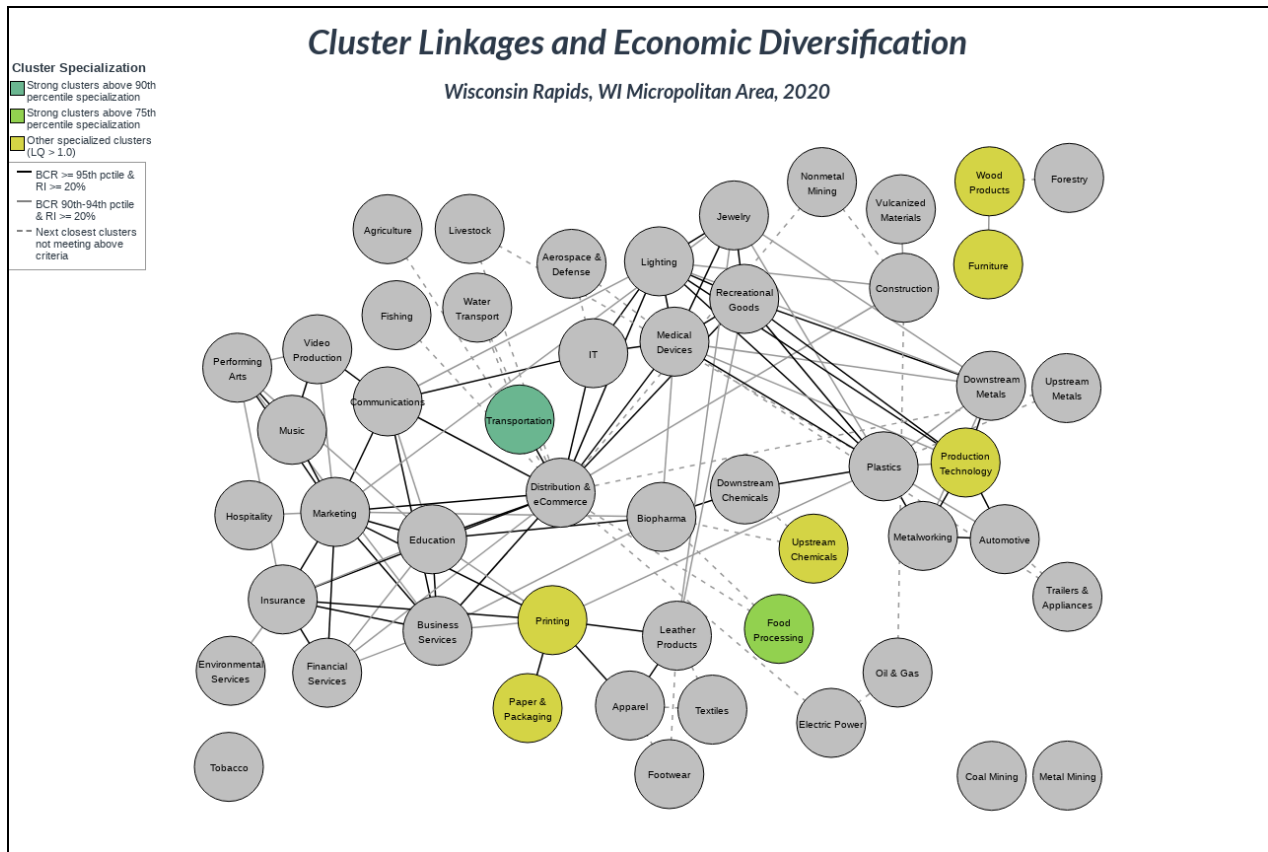
Source: U.S. Cluster Mapping Project

Other Economic Clusters

The following industries represent strong economic clusters in the Wisconsin Rapids-Marshfield micropolitan area (as defined by the U.S. Census Bureau). These are considered “traded” clusters in that their goods and services are predominantly sold outside of the region (as opposed to “local” industries like retail, restaurants, education, public sector, etc.) which make them well positioned for growth as demand for these products fluctuates throughout the U.S. and in key export markets.

- Transportation and Logistics
- Wood Products
 - Paper, Packaging
 - Furniture
 - Printing Services
- Food Processing and Manufacturing
- Production Technology and Heavy Machinery
- Upstream (Raw) Chemical Products

The chart below depicts the linkages between key industry clusters in the region, and their downstream impacts in related industries. Clusters are highlighted if they are above the 75th or 90th percentile of all U.S. metros, or if they have employment concentrations of at least 100% of the U.S. metro area average (also known as a location quotient of greater than 1.0). For example, the Wisconsin Rapids region sports a location quotient of 23.89 for the paper and packaging cluster, underscoring its high degree of specialization and enduring role as a national leader in the industry.

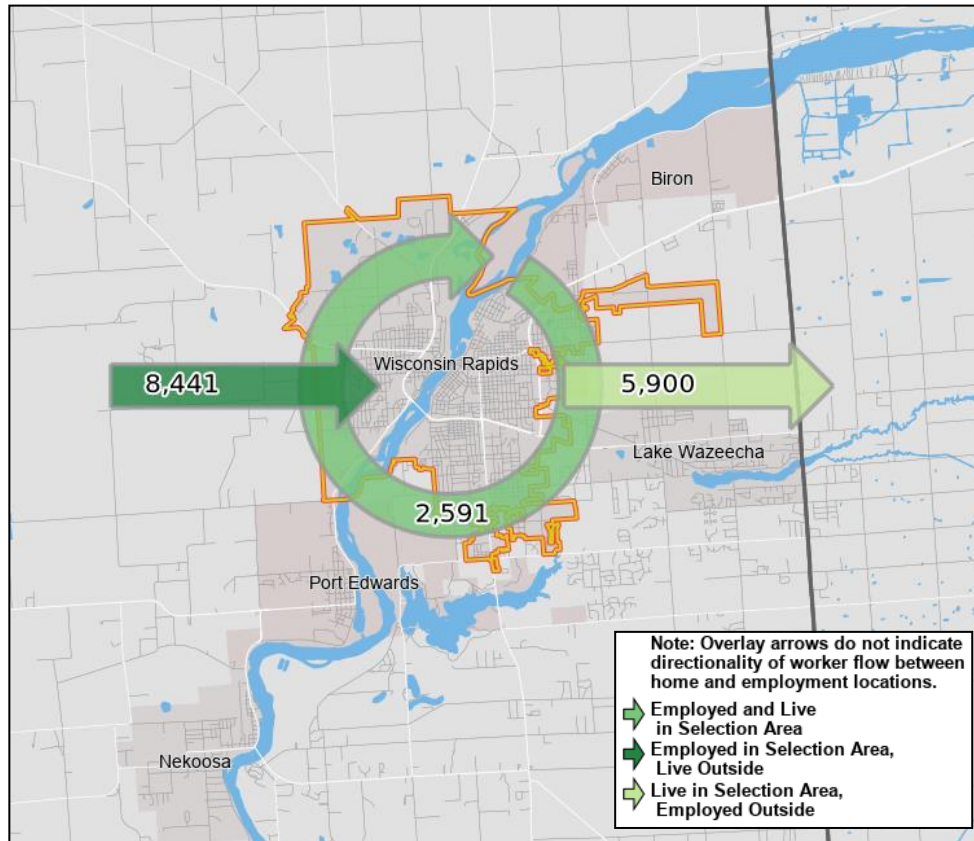


Source: U.S. Cluster Mapping Project

Labor Shed Analysis

The City of Wisconsin Rapids Micropolitan Area is home to approximately 8,500 employed residents. About 30% are employed within the city, with the remaining workers commuting to locations outside of the community. With more than 11,000 total jobs within the city, Wisconsin Rapids is not simply a bedroom community and in fact is a net importer of jobs. Local employers also rely on more than 8,400 workers (about three quarters of all employees) that commute from outside of Wisconsin Rapids. Many outside residents commute from nearby communities in Wood, Portage and Marathon counties, but also from farther flung cities and metro areas throughout Wisconsin.

With an estimated 53,000 jobs within a 30-minute drive, local employers have access to a significant labor force of nearly three times the total population of Wisconsin Rapids (18,877 as of the 2020 Census). It is important to note that these figures predate the pandemic “shelter in place” orders of early 2020 and the Verso mill closure in June of that year, so more recent point-to-point data would almost certainly include circumstances that would greatly skew data gathered during that timeframe. However, if local unemployment rates are any indication, it would appear that most jobs lost or furloughed during 2020 have returned or have been replaced in other sectors of the regional economy. Further, the effects of the unusual and brief 2020 recession and the shift to hybrid work among some white-collar workers, while significant, are unlikely to have completely severed the longer-standing economic links between places of residence and places of employment among Wisconsin Rapids area citizens and workers as of 2019.



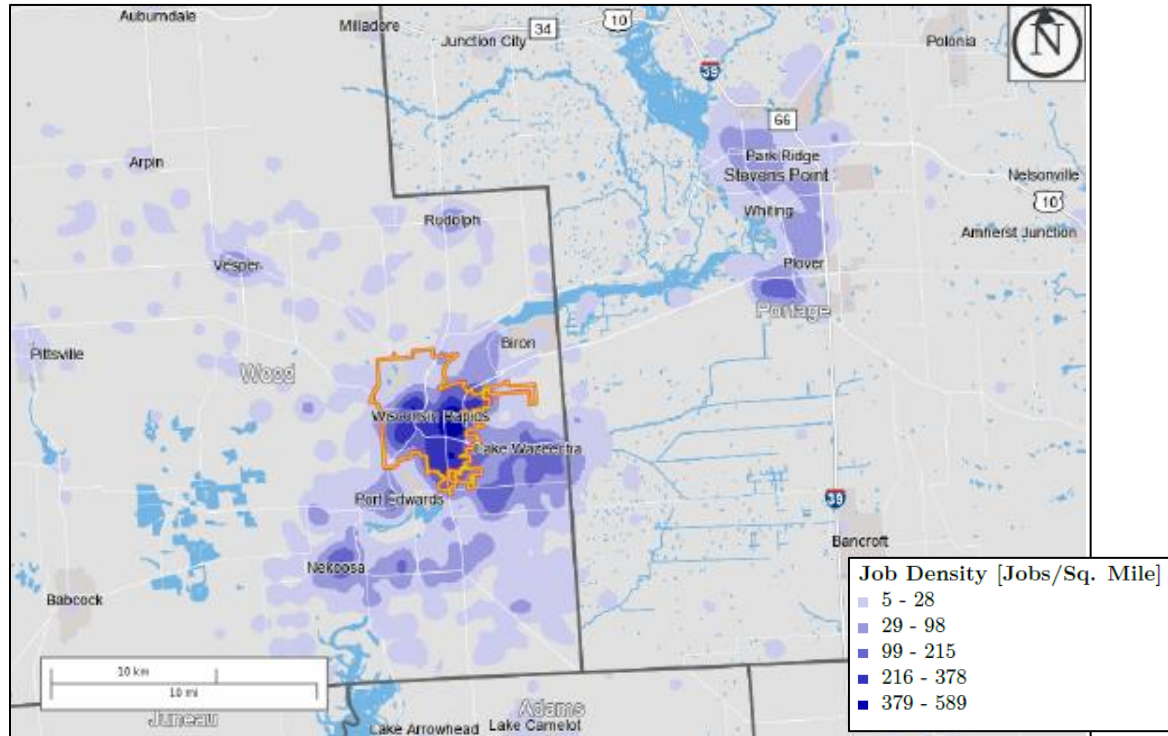
Commuter Inflow/Outflow, All Jobs, 2019		
Total Employed in Wisconsin Rapids (City Limits)	11,032	100%
Employed in Wisconsin Rapids but Living Outside	8,441	76.5%
Employed and Living in Wisconsin Rapids	2,591	23.5%
Total Living in Wisconsin Rapids (City Limits)	8,491	100%
Living in Wisconsin Rapids but Employed Outside	5,900	69.5%
Living and Employed in Wisconsin Rapids	2,591	30.5%

Source: Longitudinal Employer-Household Dynamics (LEHD), Census OnTheMap¹⁰

¹⁰ OnTheMap is a mapping and reporting tool developed by the U.S. Census Bureau showing employment and home locations of workers with companion reports for user-defined areas. OnTheMap is an useful tool to perform labor inflow/outflow analyses and provide commuting data to planning and economic development agencies as well as Wisconsin’s Regional Workforce Boards.

Jobs Counts by Places Where Workers Employed in Wisconsin Rapids Live - All Jobs (2019)			Jobs Counts by Places Where Workers Living in Wisconsin Rapids are Employed - All Jobs (2019)		
	Count	Share		Count	Share
All Places (Cities, CDPs, etc.)	11,032	100.00%	All Places (Cities, CDPs, etc.)	8,491	100.00%
Wisconsin Rapids city, WI	2,591	23.5%	Wisconsin Rapids city, WI	2,591	30.5%
Lake Wazeecha CDP, WI	441	4.0%	Stevens Point city, WI	684	8.1%
Plover village, WI	418	3.8%	Plover village, WI	477	5.6%
Stevens Point city, WI	368	3.3%	Marshfield city, WI	246	2.9%
Nekoosa city, WI	290	2.6%	Wausau city, WI	212	2.5%
Marshfield city, WI	202	1.8%	Nekoosa city, WI	183	2.2%
Port Edwards village, WI	169	1.5%	Biron village, WI	139	1.6%
Biron village, WI	124	1.1%	Madison city, WI	111	1.3%
Wausau city, WI	93	0.8%	Eau Claire city, WI	102	1.2%
Vesper village, WI	67	0.6%	Milwaukee city, WI	98	1.2%
Madison city, WI	65	0.6%	Green Bay city, WI	82	1.0%
Lake Arrowhead CDP, WI	62	0.6%	Oshkosh city, WI	81	1.0%
Rudolph village, WI	54	0.5%	Appleton city, WI	78	0.9%
Lake Camelot CDP, WI	53	0.5%	Lake Wazeecha CDP, WI	71	0.8%
Weston village, WI	47	0.4%	Weston village, WI	66	0.8%
Eau Claire city, WI	44	0.4%	Ashwaubenon village, WI	57	0.7%
Milwaukee city, WI	43	0.4%	Port Edwards village, WI	56	0.7%
Fond du Lac city, WI	42	0.4%	Whiting village, WI	47	0.6%
La Crosse city, WI	38	0.3%	La Crosse city, WI	45	0.5%
Green Bay city, WI	35	0.3%	Rudolph village, WI	44	0.5%
Pittsville city, WI	34	0.3%	Rib Mountain CDP, WI	37	0.4%
Rothschild village, WI	32	0.3%	Neenah city, WI	29	0.3%
Whiting village, WI	30	0.3%	Sparta city, WI	29	0.3%
Merrill city, WI	29	0.3%	Pittsville city, WI	28	0.3%
Oshkosh city, WI	29	0.3%	Rothschild village, WI	28	0.3%
All Other Locations		51.1%	All Other Locations		33.8%

Density of Home Locations for All Jobs in City of Wisconsin Rapids (2019)



Source: Longitudinal Employer-Household Dynamics (LEHD), Census OnTheMap

Jobs by Distance - Work Census Block to Home Census Block, 2019		
	Count	Share
Total All Jobs	11,032	100.00%
Less than 10 miles	5,855	53.1%
10 to 24 miles	2,008	18.2%
25 to 50 miles	1,107	10.0%
Greater than 50 miles	2,062	18.7%

About half of workers in Wisconsin Rapids lived within 10 miles of their place of employment in 2019, and 70% live within 25 miles. A significant portion (nearly one in five) travels more than 50 miles, many from larger cities like Madison, Milwaukee, Eau Claire, Green Bay and the Fox Valley.

Total All Jobs, 2019		
	Count	Share
Worker Age, 2019		
Age 29 or younger	2,387	21.6%
Age 30 to 54	5,693	51.6%
Age 55 or older	2,952	26.8%
Earnings, 2019		
\$1,250 per month or less	2,673	24.2%
\$1,251 to \$3,333 per month	3,616	32.8%
More than \$3,333 per month	4,743	43.0%

Worker ages are fairly well distributed, with about half in their prime earning years (30 to 54). Almost 27% are 55 or older, suggesting that many workers will be leaving the local labor force within the next decade. With a large majority of experienced employees in the city, average earnings are relatively high – 43% are paid more than \$3,333 per month (\$40,000 per year).

Worker Educational Attainment, 2019	Count	Share
Less than high school	569	5.2%
High school or equivalent, no college	2,686	24.3%
Some college or Associate degree	3,262	29.6%
Bachelor's or advanced degree	2,128	19.3%

The high proportion of well-paying blue collar and service jobs in the area has been a long-term strength of the local economy, while specialized positions requiring college degrees have become more prevalent across the nation in recent years. About

19% of workers in Wisconsin Rapids have at least a bachelor's degree or higher, compared to the 2019 Wisconsin statewide rate of 30%.

Technical Report

Forest Industries of the Future Symposium Summary

Submitted by:

Eric Singsaas

Date:

July 2023

Report Number:

NRRI/TR-2023/20

Collaborators:

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Funding:

A grant from the US Economic Development Agency funded this work.

Technical Report Information

Recommended Citation

Singsaas E. 2022. Forest Industries of the Future Symposium Summary. Natural Resources Research Institute, University of Minnesota Duluth, Technical Report NRRI/TR-2023/20. x p.

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Keywords

economic development, forestry, forest products, building materials, biofuels, bioeconomy, Wisconsin, Wisconsin Rapids

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Introduction

After the closure of the Verso paper mill in 2019, the City of Wisconsin Rapids and the surrounding region faced the loss of more than 900 jobs and more than \$566M in lost economic activity. As a result, the city, in partnership with the North Central Wisconsin Regional Planning Commission, received funding from the U.S. Economic Development Administration (EDA) to develop an economic revitalization plan for the city, the closed mill site, and adjacent land. The grantees awarded a contract to Vandewalle and Associates to create a Recovery and Redevelopment Plan that included the following components: regional economic vision and strategy development, site market assessment and redevelopment, and implementation plans.

To support the vision and strategy plan for regional economic development, Vandewalle and Associates hired the Natural Resources Research Institute (NRRI) to engage the community in a discussion about future opportunities in the forest products sector. The meeting was a half-day seminar presenting new business opportunities and a conference about the role that research, government, private investment, and economic development organizations can play in supporting them. This report summarizes the information provided at this event and synthesizes some conclusions about how to encourage a thriving forest products industry in the coming decades.

Background

The demand for wood and biomass products will likely change substantially in the coming decades. These materials are widely used in various applications, including building, packaging, fuel, and personal care products. The Food and Agriculture Organization of the United Nations conducted a detailed scenario analysis of how changing market structures, policies, rates of technological change, and potential new products may impact these sectors through 2040. This report suggests that North America could experience increasing forested area, increased total growing stock and production of industrial round wood, increased prices (although modest) for primary and secondary forest products, reduced share of global sawn wood production volume, stagnant wood-based panel production, and increased consumption of forest products (1). One key factor driving this demand is the increasing focus on sustainability and using renewable materials instead of petroleum-derived materials (2). In addition, wood and biomass are biodegradable, renewable resources, and sequester atmospheric carbon, making them more environmentally friendly than non-renewable materials like plastic and steel. This is particularly important as global efforts to reduce greenhouse gas emissions and combat climate change continue to grow.

For buildings, wood, and biomass materials are widely used in the construction industry, which will likely continue. Wood is a versatile material that can create everything from sturdy structural elements to decorative finishes. It is also relatively light and easy to work with, making it a popular choice for builders and architects. Additionally, using wood in construction can help offset the carbon emissions associated with traditional building materials, an essential consideration for those looking to reduce their environmental impact. Mass timber construction is becoming increasingly popular because of its potential to sequester carbon in buildings while displacing steel and concrete (3).

For packaging products, wood, and biomass will also likely continue to be in high demand. These materials are durable and can create a wide range of packaging solutions, including boxes, crates, and pallets. Wood and biomass products are also biodegradable, which makes them an appealing option for those looking to reduce their environmental impact. Additionally,

using wood and biomass in packaging can help reduce the amount of plastic waste generated, a significant concern in many parts of the world.

Finally, wood and biomass are also widely used as fuel, which will likely continue (4). Wood and biomass can be burned to generate heat and electricity, often serving as primary fuels in rural areas where access to other forms of energy is limited. Using wood and biomass as fuel can help reduce reliance on fossil fuels and provide a source of income for those who produce and sell these materials. Overall, the demand for wood and biomass products could remain strong if there is continued demand for renewable fuels.

Problem Statement

Economic development around the closed paper mill in Wisconsin Rapids will depend on new uses for regional timber resources. Therefore, the economic development community and government officials often need to know about advances in timber and forest products markets and technology.

Methods

We hosted an online public *Forest Industries of the Future* Symposium from 2-4 PM on July 21, 2022. The first hour we offered presentations from five projects with new offerings in forest-based products. We selected speakers representing projects demonstrating new technology and process developments for wood use in building materials (including exterior cladding, structural, and insulation), bioenergy, and packaging. Projects were at various stages of commercialization, from early startup to full-scale plant build-out.

The meeting hosts encouraged the audience to ask questions using the online chat function. In addition, hosts specifically encouraged questions about moving from innovation to commercialization rather than about the specific technologies and innovations presented.

The second hour we offered a panel discussion with government, research, and commercial development professionals centered around opportunities to bring new wood-based industries to Wisconsin Rapids and how to bring together the necessary components of innovation, finance, and policy to establish new businesses in the vicinity.

The meeting slides, and panel discussion were made available to the general public via the project website (5).

Results

Technical Presentations: Innovative new Wood Products

There were five presentations of technology overviews during the first hour. The following paragraphs summarize the presentation topics.

Building Products: Exterior Cladding

Matt Aro, Natural Resources Research Institute

Mr. Aro presented work on the development and commercialization of Thermally Modified Timber in North America. Thermally Modified Timber (TMT) is made from dimensional lumber treated with heat and a low-oxygen environment to improve its durability, dimensional stability, and moisture holding for outdoor applications. Research on this material included establishing

performance targets for small-diameter and traditionally underutilized species, including balsam fir, eastern hemlock, white ash, red maple, and yellow poplar. Other research focused on improving the colorfast properties of TMT using low-cost treatments and the development of mass timber composites from TMT wood strands for wood-based building materials.

Building Products: Interior Materials

Scott Dionne, TimberHP

Mr. Dionne presented on building insulation made from wood pulp by a dry process method. This technology was developed to use thermomechanical pulp to create an insulation product with low embodied energy. TimberHP plans to enter the market in 2023 with three products; loose-fill, insulation boards, and batting at competitive prices with the incumbent products today. They have secured financing for a first production facility at a closed paper mill in Madison, Maine, and are seeking sites for another ten production facilities around North America.

Building Products: Structural Materials Timbatec

Patrick Donahue, Natural Resources Research Institute

Mr. Donahue presented on behalf of Timbatec on the topic of Scrimber Carbon Sink Concrete. Timbatec is a Swiss company leading innovations in Europe's mass timber construction industry. Mass timber is a construction technique that has become popular in recent years due to its lower climate impact than traditional construction techniques. However, as currently conceived, mass timber uses large amounts of high-quality wood at low efficiency, with only 30% of the harvested timber turned into usable materials. Scrimber is a technology to produce structural wood products for mass timber buildings from small-diameter timber. This project came about through a program to develop a regionally appropriate mass timber building industry that fits the available wood resources and building market in the midwestern states. This project aims to use nearly 100% of the tree to make a pressed wood product for structural components. There are several technical and market barriers to overcome to achieve this objective. Timbatec plans strategic research and development investment to address these barriers to establishing a full-scale production plant in 2028.

Energy: Bio-Refinery

Tracy Saville, Comstock Inc.

Ms. Saville, presenting on behalf of their Chief Technology Officer David Winsness, discussed the advancement of cellulosic biofuel production from woody biomass. Comstock, formerly a mining company, has a new company-wide focus on developing sustainable technologies such as battery recycling and cellulosic fuels. This presentation focused on the commercialization of their forest biorefinery process. This process creates cellulosic fuels from diverse woody feedstocks, including unmerchantable trees and mill residuals, to decarbonize transportation fuels; bio-ethanol, jet, diesel, and marine fuel. Comstock is engineering the first full-scale facility in North America, planning to develop more facilities soon.

Packaging: Plastic Alternatives

Addie Teeters, Ahlstrom-Munksjo

Ms. Teeters discussed new wood fiber-based packaging solutions under development that can displace plastics. They are leading a company-wide initiative called "From Plastic to Purpose." They work closely with customers and consumers to consider fiber-based packaging instead of plastics because they offer advantages of compostability and disposal at the end of life over plastic-based technology. Some innovations include fiber-based transparent paper to displace plastic windows in packaging, wax paper alternatives, oxygen barrier materials, and 100%

biodegradable e-commerce packaging solutions. Finally, Ms. Teeters discussed engaging consumers and the public to understand biodegradable and compostable packaging.

Panel Discussion: Implementation Pathways

The second hour of the presentation comprised a panel discussion of experts in research and development, innovation, technology transfer, and government relations. The panel discussed how their respective organizations assist with the new business establishment and opportunities to bring together a concerted effort to establish a new forest products industry in Wisconsin Rapids and the region.

Panelists

Entrepreneurship: Idella Yamben, Center for Technology Commercialization

Idella introduced the Small Business Innovation Research program and the CTC's role in helping businesses apply for startup funding.

Translational Research: Arjun Sanga, WiSys

Arjun introduced WiSys, a nonprofit that can assist entrepreneurs with a pathway from innovation to business development. WiSys hosts a new venture Home Network program to help further innovative business development.

Industry Coordination: Masood Akhtar, Bio-Renewable Deployment Consortium

Masood introduced his role in the BRDC, which helps to make companies more competitive and more sustainable, focusing on pulp and paper companies by bringing new technologies to market with a focus on products made from wood residuals for biofuels, biochemicals, and new materials.

Economic Development: Melinda Osterberg, WEDC Regional Economic Development

Melinda is a regional economic development officer with WEDC. Her role is to assist business development in the middle part of the state.

Discussion Summary

Overall, the panel discussion focused on envisioning a pathway to a more diverse and thriving wood products industry for the Wisconsin Rapids area. There are examples in other sectors perceived as vibrant and growing, such as FinTech and BioTech. These industries have internal innovation teams and design-thinking workgroups within companies that represent sector-wide innovation. These groups aim to get a better understanding of what are the key challenges that they can address and then apply available funds to bring solutions to market. The panel envisioned how this could work proactively in the forest products industry.

There is a role for public-private partnerships to engage early and often with industry to identify needs now and in the future. A starting point is to bring the industry people together with the right partners in research, government, and the entrepreneurial ecosystem. Wisconsin has already formed two organizations to address these gaps: the Bipartisan Paper Caucus and the WiSys Venture Home program. The Bipartisan Paper Caucus is a group within the Wisconsin Legislature formed to keep the industry's needs in front of the state government. WiSys created the Venture Home program (6) to unite people interested in innovation for Wisconsin's rural communities and connect university talent with these networks. One further gap the panel identified is those who may not self-identify as entrepreneurs, such as small businesses and workers in the community. This gap is not necessarily limited to science and technology either. Innovations can include policies, activities, or other things that move a business forward. There

is an opportunity to offer experiential learning, training and development, and conversation with technology developers.

The panel also addressed the investment requirements to maintain an innovative and vibrant industry. Legacy industry research and development funding has declined over the long term. Research funds are available from state and federal sources, such as the Small Business Innovation Research program, to support research and development. Finally, WEDC assists existing companies in two primary areas; funding expansion and growth and working with entrepreneurs to grow their businesses. Although many of these state-supported programs are limited in funds, there are opportunities to combine funds from different sources. For example, breaking research and development into steps through a stage gate process or combining various funding sources to address different aspects of a development process, such as technical work and customer engagement.

The state of Wisconsin offers access to experts who can help business access and use this funding. The Center for Technology Commercialization provides grant writing and fundraising assistance for new businesses to help access these funds and additional grant funds to support business development activities. WiSys is a window into research in regional UW campuses by finding opportunities to collaborate with faculty with specific areas of interest. WiSys also curates internal funding opportunities to work with University of Wisconsin System faculty members. They can play a matchmaking role and host reverse pitch sessions, whereby companies can bring research needs to the University community to find available research talent.

The panel discussed opportunities to address the disconnect between the short-time horizon needs of equity investors versus the long-term investments required for natural resource-based businesses. Although there is investment money available, the industry is typically risk-averse. In this environment, entrepreneurial companies might consider a build-own-operate business model. This model allows the small company to take on the risk of deploying a new process by working in partnership with a host company or site. The Bio-Renewable Deployment Consortium can assist with getting a small company/entrepreneur in the door with a business. Ultimately, there may be an opportunity to leverage federal funds to make long-term investments in innovation through research programs such as NSF Regional Innovation Engines (7)(8), a program created to catalyze innovation and education in industry sectors regionally across the country.

Conclusions

The coming decades offer many innovation opportunities for the forest products sector. The technical presentations demonstrate that much of this will be driven by the superior environmental and climate performance of wood and fiber-based products over competing materials. Cellulosic fuels and mass timber buildings offer lower climate impact substitutes for incumbent products. Fiber-based packaging and thermally modified timber products offer reduced land and water impacts and superior end-of-life options relative to petrochemical alternatives. Fiber-based insulation provides excellent performance in both climate and pollution impacts.

The symposium presentations were a limited list of opportunities. While there will likely be continued growth in packaging, building materials, and renewable energy products, other possibilities are not showcased in this forum. Most significantly, the market for personal care and medical products, especially as many baby boomers enter their senior years. Biochar production is another area where wood and biomass products will likely see growing demand.

Biochar is charcoal made by heating wood or other biomass materials without oxygen. It is used as a soil amendment to help sequester carbon while improving soil quality (9). Biochar also offers opportunities in water treatment and carbon sequestration materials (10). Although the biochar market is in its infancy, demand for biochar may continue to grow as more and more people become aware of its benefits, and efforts to improve soil health and sequester atmospheric carbon continue to grow.

Bringing new technologies to the market requires engagement with a wide-ranging network, including entrepreneurs, government, academia, finance, workforce, and industry—each technical innovation presented at the conference leveraged assets from most or all of these areas. The state of Wisconsin has a good ecosystem of expertise to bring together these elements through programs administered by WiSys, the Center for Technology Commercialization, and the Wisconsin Economic Development Corporation. City and regional leaders should be aware that these assets are available as they consider attracting and retaining new businesses in the forest products industry.

New policies and legislation can also impact economic development by incentivizing new products and services. At the federal level, the 2022 Inflation Reduction Act may create new opportunities for forest products through changes in tax incentives for renewable energy, energy efficiency, and carbon sequestration. To incentivize the development of renewable fuels, this act provides funding for the US EPA to expand the Renewable Fuels Standard by expanding incentives for advanced biofuels and sustainable aviation fuel (11). In addition, the Future Fuels Coalition is advocating for midwestern states, including Wisconsin, Minnesota, and Illinois, to adopt a Low Carbon Fuel Standard (12). This standard would encourage the production of renewable fuels made from wood and perennial crops due to their lower life cycle carbon emissions relative to corn ethanol and soy biodiesel.

In summary, collaboration among business, research, and government organizations is crucial for creating economic opportunity. By leveraging their respective strengths and resources, these entities can drive innovation, support policy development, and foster an environment conducive to economic growth for the region.

Acknowledgments

The authors thank the Wisconsin Economic Development Corporation and the Heart of Wisconsin Community Incubator for administering the EDA funds and selecting Vandewalle and Associates for this project.

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APPENDIX D:

Wisconsin Rapids Recovery & Redevelopment Plan

Emerging Trends In The Forest Products Industry Supporting Sources

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