

ONTARIO'S VALUE-ADDED WOOD PRODUCTS MARKET POTENTIAL IN THE U.S. GREAT LAKES STATES



VOLUME 1 MAIN REPORT



Prepared for the Living Legacy Trust
December 2003

WOODBIDGE ASSOCIATES INC.
In association with Clayton Research Associates

This page is intentionally left blank.

Preface

This report has been prepared for Ontario's Living Legacy Trust under Phase II of Funding Program 6. The report comprises the following documents:



See websites:
www.livinglegacytrust.org
www.olma.ca
www.woodbridgeassociates.com

VOLUME 1
Main Report

VOLUME 2
Industry Profiles

VOLUME 3
Product Benchmarks



Available only to
Qualified Users.
See footnote ¹

VOLUME 4
Opportunities Report

For enquiries about this report and consulting services, please contact:

Peter Woodbridge
President
Woodbridge Associates Inc.
1084 Eyremount Drive
West Vancouver, BC
(604) 922 4090 (office)
(604) 970 7784 (cellular)
pw@woodbridgeassociates.com

Peter Norman
Vice-President
Clayton Research Associates Ltd.
1580 Kingston Road
Toronto, ON
(416) 699 5645 (office)
(416) 994 9467 (cellular)
pnorman@clayton-research.com

© 2003

¹ For competitiveness reasons, Volume 4 *Opportunities Report* is available only to firms that have operations within Ontario. Please contact Karan Aquino, Executive Director of the Living Legacy Trust. www.livinglegacytrust.org

Introduction

This multi-volume report focuses on the export market outlook for three specific product groupings produced in Ontario:

- Group A: Wood Building Components
- Group B: Millwork
- Group C: Factory-Built Structures

The goals of this study are to identify dominant and growth products within each of these three product groups. It is intended that the study will help Ontario's manufacturers identify intermediate and end-use markets for at least the dominant and growth products, and link these to increased trade between Ontario and the United States.

Scope and Layout of the Report

'*Volume 1 Main Report*' provides detailed analyses of export market opportunities in the Great Lakes region for the three sub-groups of Ontario's wood product manufacturing industry. Volume 1 also presents our evaluation of Ontario's competitiveness in these product groups compared with other suppliers. Conclusions are presented for (a) strategic issues and (b) operating issues that might impede Ontario's ability to capture these growth opportunities. Volume 1 contains our recommendations for follow-up initiatives and an Executive Summary.

'*Volume 2 Industry Profiles*' provides a summary of data relating to the industry size, shipments and product-mix profile of the Ontario wood products industry. These are used as a base for the analyses presented in Volume 1. It also presents a profile of the structure and shipments of the wood products industry in the U.S Great Lakes region relating to the three groups of products identified above.

'*Volume 3 Product Benchmarks*' forms part of this series. It presents an overview of Ontario's wood product exports to the Great Lakes. Benchmark data are provided summarizing Ontario's exports to each state. Volume 3 also presents economic profiles of the eight Great Lakes states with demographic and construction industry projections to 2010 and 2020. These provide a basis for our forecasts of future demand.

Finally, '*Volume 4 Opportunities Report*' presents additional details of the specific opportunities discussed in Volume 1 along with an analysis of the economic, financial and policy implications of the growth projections.

Volumes 1-3 are available to the general public from the Living Legacy Trust. Volume 4 is available only to firms that have operations within Ontario.

A *Glossary of Terms Used* is provided in Appendix A.

IMPORTANT NOTES & DISCLAIMER

The Consultants have prepared these reports on the basis of the best available information and provide these findings in good faith with the intended goals as stipulated in the terms of reference. The Consultants do not accept any responsibility for any decisions taken directly or indirectly, in whole or in part, based on information or findings contained in the report. Users of the information are advised to verify all data and analyses for themselves before proceeding with any course of action that appears merited by the analyses and conclusions provided.

The Living Legacy Trust

The *Living Legacy Trust* is a \$30 million fund established by the Province of Ontario to invest in natural resource management projects in northern Ontario. The assets of the Trust are managed by an independent Board of Directors which represents various stakeholder groups. Projects receiving funding will bring economic, social and recreational benefits to the people of Ontario and serve as models of excellence in forestry, fish and wildlife practices.

Value-Added Committee Members

Value-Added Committee members acting as advisors on the Phase II study include the following.

Steve Banducci
Forest Business Analyst – Forest Business and Economics Section
Ontario Ministry of Natural Resources

Bill Kissick
Manager, Forest Business and Economics Section
Ontario Ministry of Natural Resources, Forests Division

Beth Litchfield
Northern Development Adviser, Natural Resources – Sudbury and Area
Ontario Ministry of Northern Development and Mines

Ian McCormack
Vice President, Community Development & Innovation
Confederation College

David Milton
President
Ontario Lumber Manufacturers Association

Maureen Prendiville
President
Kenora Forest Products Ltd. / Prendiville Industries

Reino Pulkki
Dean, Faculty of Forestry and the Environment
Lakehead University

Bob Seguin
Assistant Deputy Minister, Employment and Business Development Division
Ontario Ministry of Enterprise, Opportunity and Innovation

Karan Aquino
Executive Director
Living Legacy Trust
www.livinglegacytrust.org

Table of Contents

Executive Summary	7
Purpose of the Report	21
Phase I Global Competitiveness Benchmarking	21
Phase II Market Study of Three Product Groups.....	21
U.S. Great Lakes Market Region Definition.....	21
The Ontario Wood Products Industry	25
Value of Output.....	25
Consolidation in Ontario's Integrated Wood Products Industry	30
The Great Lakes Market Region	37
Market Research Area.....	37
Residential New Construction	38
Manufactured Housing	39
Non-Residential Construction Markets	39
Ontario's Existing Shipments to the Great Lakes	39
Primary Wood Product Markets in the Great Lakes	41
Value-Added Wood Product Markets in the Great Lakes	41
Product Succession and Substitution Trends in the Region.....	43
Evolving Distribution Patterns into the U.S. Great Lakes	43
Issues	44
Capital Expenditure Benchmarks	45
Transportation and Distribution Logistics in the Great Lakes	48
Macro-Economic Outlook and Projections of Demand.....	48
Group A: Market Opportunities in Engineered Wood and Building Components ..	51
Definitions.....	51
The US Structural Engineered Wood and Building Components Market	54
Structural Engineered Wood & Building Components: Sub-Sector Analyses	57
Structural Floor Systems	57
Structural Walls	63
Eastern SPF	64
Structural Roof Systems.....	68
The Rim Board Market	72
Structural Beams	76
The Headers Market in the US	79
Header Market Demand in Great Lakes States.....	79
Systems Approach to the Headers Market.....	80
Group B: Market Opportunities in Millwork	83
Wood Windows & Doors.....	83
US Imports.....	84
Windows and Doors in Factory-Built Structures	86
Other Millwork.....	87
Demand for Wood Windows & Doors in the New Construction Market.....	88
Exterior Doors.....	89

Demand for Wood Windows & Doors in the Remodeling Market.....	89
The US Wood Windows Industry.....	89
The US Other Millwork Industry.....	90
Demand for Other Millwork and Flooring in Factory-Built Housing.....	91
Demand for Other Millwork in the Remodeling Market.....	91
The Ontario Wood Window, Door and Other Millwork Industry.....	92
Hardwood Lumber.....	92
Product certification Issues.....	92
Group C. Market Opportunities in Factory-Built Housing.....	97
How Significant are Factory-Built Technologies?.....	99
Placement of HUD-Code Manufactured Homes.....	99
Consumption of Factory-Built Homes.....	100
Trends in Factory-Built Housing.....	104
Prospects for Factory-Built Housing.....	106
Technology and Building Products.....	108
Materials Procurement.....	113
Regulatory Issues and Environment.....	114
Affordability.....	114
Conclusions – Market Opportunities, Strategic and Operating Issues.....	119
Strategic Issues.....	119
Operating Issues.....	121
Discussion of Strategic Issues.....	122
Recommendations.....	143
Competition and Confidentiality.....	143
Appendix A.....	149
Definition of the U.S. Great Lakes Area.....	149
Glossary of Terms Used.....	149
Appendix B.....	153
Description of Structural EWPs and Building Components.....	153

Executive Summary

Ontario's wood products and value-added wood manufacturing sector is one of the most important and substantial contributors to the provincial economy, both in northern Ontario and the south, but is significantly under-rated.

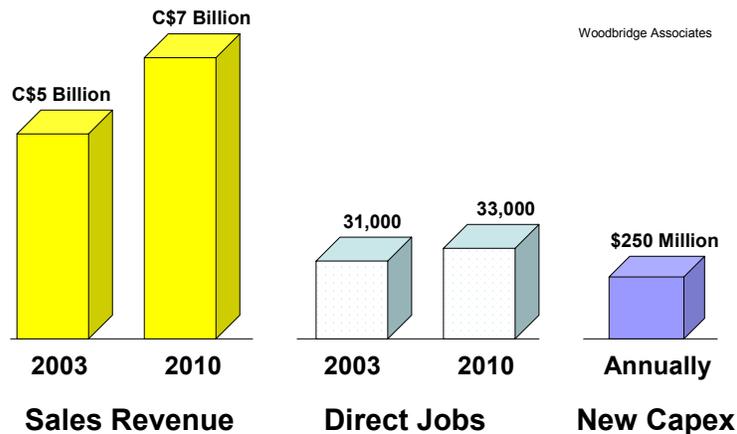
It has good prospects for sustainable growth, averaging 7% sales increase per year.

The best opportunities are (1) upgrading of existing eastern-SPF primary wood products (dimension lumber) and increased output of MSR and fingerjoint lumber, (2) a significant expansion in value-added capacity, notably structural engineered wood products (EWP) and building components (lumber-flange I-Joists, open web joists and wall panels), and (3) technological leadership in factory-built housing systems.

Market potential for Ontario wood products in the US Great Lakes states is identified in this report. Achieving the growth assumes that the primary wood products sector will invest in modernization and a significant shift in its product-mix. A constant softwood harvest is assumed.

Chart 1

Financial Implications of Ontario's Growth Potential in Wood Products and Value-Added Manufacturing



The magnitude of these opportunities is substantial. Over the next several years, the value of the sector's total shipments could increase by 40%, from an estimated C\$5 billion in 2003 to C\$7 billion by the year 2010 (Chart 1). Rising product prices (average 2% annually) would increase this gain.

Direct employment in the wood products and value-added wood manufacturing sector currently is estimated at around 31,000 employees. When all forest industry direct and indirect jobs are taken into account, including logging, pulp and paper, it is estimated that total employment in the timber resource-based economy is around 180,000 persons, or 1 in 31 employed Ontarians.

Growth of the sector to 2010 will create new jobs in northern Ontario, but through capital investments in larger scale plants and automation in the south, the net new jobs gain for the province overall will be modest.

This is an important under-pinning for the significant gains in productivity that are possible in several key manufacturing sub-sectors. If future state-of-the art manufacturing facilities located in Ontario and employing younger generations of computer-skilled workers are to be globally competitive, high levels of productivity using automated equipment are vital.

Some of the world's largest wood products companies have manufacturing operations within Ontario. Weyerhaeuser, for example, recently invested C\$260 million² in a state-of-the-art world class structural engineered wood product (EWP) plant in Kenora, ON.

We estimate that the order-of-magnitude level of *incremental* capital spending required to (a) upgrade existing sawmills in the province and (b) invest in more manufacturing capacity in structural EWPs and value-added building components will be close to C\$250 million annually, or the equivalent of one new Kenora EWP plant every year until 2010.

Significant new investment will be required in manufacturing technology R&D, education and skills training and marketing. Skills training should focus on construction design, engineering and building systems. Ontario's access to skills training facilities is excellent, but under-funded.

Summary of Sales Growth Opportunities

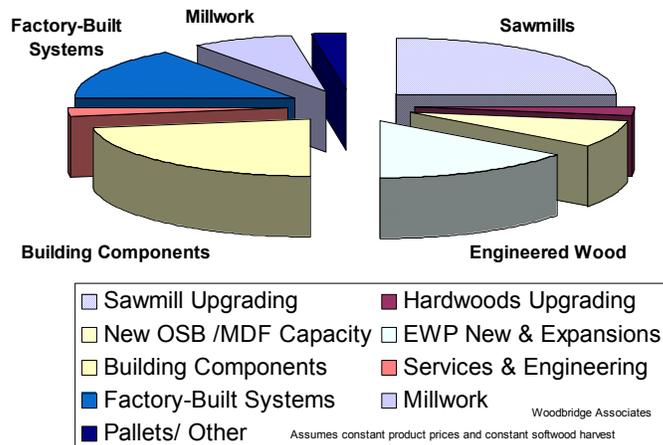
By 2010, increased sales would come from five areas. Four of these are related. Ontario's sales to the Great Lakes and its expansion in building components, some types of engineered wood and factory-built housing systems, would be facilitated by a substantial upgrading of Ontario's sawmill industry. From a market and product quality perspective, this is long overdue.

Capacity growth in other products would not be linked to an upgrading of Ontario's sawmills. These include LSL, OSB and MDF as well as wood windows and doors (Chart 2).

Chart 2

**Ontario Wood Products
 Potential Sales Increase, by Group**

Total C\$ 2 BN Annually by 2010



² Source: *Logging & Sawmilling Journal* (February 2003)

Some of Ontario's sawmills are modern, large scale and comparatively efficient. Many others are not. Upgrading those that can be economically viable is necessary to (a) improve US export product quality and (b) better meet the needs of Ontario's construction markets and value-added sector.

Ontario substantially increased its softwood lumber production during the past decade. Much of the increased volume is sold to the Great Lakes markets. Unlike Quebec, however, the Ontario lumber industry has not invested extensively in faster growth products such as machine stress rated (MSR) lumber, fingerjoint studs and overall quality upgradings. Part of Ontario's output is green lumber. Kiln dried quality is perceived in the marketplace to be inferior to western SPF. At some mills, target sizes are too tight because the mill focuses excessively on volume throughput rather than quality. The level of skip on dressed lumber is unacceptably high and lumber frequently varies widely in its moisture content.

This is not a good base of supply for sustainable exports. Nor can it meet the needs of Ontario's non-integrated value-added wood product manufacturers, many of whom now purchase their materials from outside the province. The province loses the benefits of industrial synergies and cost savings that could be available if sub-sectors were more closely linked to each others' needs.

In the past, the largely export-focused lumber, OSB and MDF industries did not have to be unduly concerned about domestic market customers. With the prospect of renewed softwood lumber quotas under a possible new trade agreement ("SLA II"), sawmills will not be able to export the volumes they would wish to the United States. There will be a struggle to obtain quotas.

Under "SLA II", Ontario sawmills will be able to operate at higher rates of capacity utilization and export their higher grades of dimension lumber to the US using quota, if they improve the quality of products sold to the US and to Ontario's domestic producers of value-added wood products.

Many non-integrated producers of EWP's, building components (wood trusses, I-Joists and wall panels), factory-built housing and millwork depend for their competitiveness on continuation of the low value of the Canadian dollar in US funds. They have several strategic options for growth and reduced dependence on the currency advantage. An important strategy option is for the Ontario wood products industry to become a technology leader in the high growth products identified.

The Great Lakes Market

This region is Ontario's most important market area for wood products and value-added exports. Total population in the region is 83 million persons, or about the population of Germany.

Chart 3

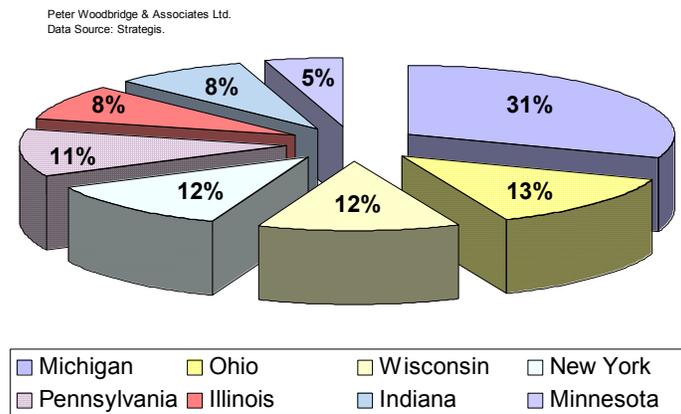


The Great Lakes region has many distinct sub-markets and consumption of value-added wood products can vary widely. No single manufacturing region of North America dominates supply. The buyer has many choices. High levels of product and species displacement take place.

As the traditional manufacturing heartland of the United States, the Midwest/Great Lakes region has achieved an economic renaissance, but suffers from construction labour shortages. The site-built residential and non-residential construction industries are extensive users of labour saving engineered wood and off-site fabricated building components, ready-to-install window and door units, unitized millwork items and factory-built modular homes. This is good for Ontario.

Chart 4

Michigan is the Largest Overall Market Area for Ontario's Wood Product Shipments to the Great Lakes



Michigan is Ontario's most important market within the region (Chart 4) accounting for 31% of the province's shipments in 2002. Ohio, Wisconsin and New York are other important markets. The 'Top 4' account for a combined 68% of all Ontario's wood products shipments to the region.

Housing demand is substantial. Population growth and housing starts are higher in the US South and South-West, but average personal incomes in the Great Lakes are about 3% better than the national average. Population growth in the Great Lakes states has lagged behind the U.S. overall, as domestic retirees continue to migrate toward the South and South West.

Construction industry expenditures in the Great Lakes create strong demand for building materials. Non-residential construction makes up 59% of total expenditures compared with 41% for homebuilding. Steel and concrete dominate non-residential construction (there is scope for greater use of wood) and major parts of the multi-family residential construction market.

The Great Lakes residential market is a large consumer of wood and the fight for market share is between (a) traditional products, such as solid dimension lumber and plywood, and engineered wood products in structural markets, (b) different species, and (c) suppliers from various North American regions versus fast-growing offshore suppliers including Chile, Brazil and New Zealand in non-structural products such as millwork. It is widely known that imports from China now dominate the US furniture market (furniture is not part of this study). Less well known are the sizeable impacts that imports from offshore are having on the North American millwork industry.

Much of North America's HUD Code manufactured housing capacity is located in the Great Lakes, notably in clusters in Indiana. Other centres of excellence exist in modular residential housing (e.g. Pennsylvania). The region also has a well developed roof and floor truss industry. Large efficient wall panelizers and factory-based custom homebuilders, such as Wausau Homes, are located within the region. Ontario still maintains a significant market share in the supply of building components, including I-Joists, trusses and wall panels. These are the types of technologies in which much of the province's future competitiveness in value-added wood product exports exists.

The Great Lakes region is an extensive consumer of wood windows and doors, mouldings and other millwork. As a result, many of the world's largest and most advanced windows and doors producers (e.g. Andersen Windows) are located there³. Ontario's wood windows and doors industry is increasing its market share in selected markets.

With changes, there are numerous opportunities in the Great Lakes market for Ontario producers to sell more of their existing and new products, and opportunities for strategic alliances and joint ventures with US producers, distributors and construction firms.

Strategic Initiatives

In order to be cost and service competitive, Ontario producers cannot continue to rely on Canada's exchange rate advantage. Emphasis must be on improved product quality, service and technical support.

In addition, to achieve low unit costs, Ontario's wood products and value-added manufacturers will have to invest significantly in automation for productivity gains and become technology leaders in their manufacturing core competencies. Major investments in education, skills training and technology transfer will be necessary. For effective sales, spending on market research and new product development will be essential. Innovation by the industry generally is low.

Ontario has potential, but seems to lack the vision that its wood products and value-added manufacturers can become globally competitive and a world leader in selected product groups. In many ways, Ontario is over-shadowed in the wood products manufacturing business by Quebec and British Columbia.

Northern Ontario is a potential area for future wood products manufacturing development. This is a vast geographical area with considerable timber and people resources. Value-added manufacturing industry development in the north presents special logistical and other challenges, and cannot be divorced from the region's integrated wood products industry.

In the following tables, we summarize product-market opportunities for Ontario in three main groups. In addition, because of the strong linkages between certain areas of value-added manufacturing competitiveness and the resource-based primary wood products industry, we discuss the implications for the Ontario's wood industry as a whole.

The three groups are:

Group A: Structural Building Products

Group B: Millwork

Group C: Factory-Built Housing

³ Pella Windows is located in Iowa, just outside the Great Lakes region.

Group A: Structural Building Products

**Table 1
 Group A: Structural Engineered Wood & Building Components Opportunities**

Sub-Sector	Ranking of Growth Prospects for Ontario	
	Immediate Commercial Opportunities	Longer Term Potential
Structural Floors	#1	#1
Structural Exterior Walls	}	#2
Structural Roof Systems		#3
Rim Boards	#5	#6
Headers	#6	#5
Structural Beams	#4	#4

Source: Section A. For details of product and services opportunities, see Volume 4 *Opportunities Report*.

Table 1 presents immediate and longer term priority rankings for the growth product opportunities identified in the Phase II reports. Columns should be read vertically. For immediate action, the best commercial prospects in value-added wood products for Ontario are #1 structural floor systems, including I-Joists and open web wood trusses; #2 structural exterior walls (panelized walls and SIPs) tied jointly with structural roof systems (wood trusses and SIPs); #4 structural beams (strong growth in TimberStrand); #5 OSB and TimberStrand rim boards and #6 factory-built headers.



Dimension lumber will fight strongly to retain its dominant share of many of these markets, based on price and improvements in product quality and technical service. New “middle market” products, notably laminated items, can be expected to emerge and challenge some of the higher cost EWP’s. Where appearance and aesthetics are important, architectural timbers will continue to challenge large laminated, three-dimensional beams notably in higher-end markets.

Longer term growth options are: (#1) structural floor systems, notably complete off-site fabricated modular units; (#2) structural exterior walls (with strong growth in semi-open and growing demand for closed panelized walls); (#3) structural whole roof systems and structural beam assemblies fabricated off-site; (#4) some new generation laminated beams; (#5) new-technology factory-built short and medium length headers; and (#6) low cost OSB and TimberStrand rim boards

continuing to displace plywood, LVL and re-sawn glulam. Feature timbers and structural appearance products will continue to enjoy growth of market share outside the single-family market, in lodges, rural hotels and a wide range of commercial buildings.

We expect to see increased acceptance, within the current decade, of partial and full-home building systems notably among large tract builders. Technological pioneering will be driven by homebuilding "Giants", such as Centex and Pulte, and by some of the pioneering medium scale homebuilders who increasingly will be driven by opportunities to (a) introduce customization in design along with automation in construction and (b) squeeze out costs from the supply chain. Details of product opportunities along with manufacturer-distributor and manufacturer-homebuilder strategic alliance opportunities are provided in Volume 4 *Opportunities Report*⁴.

Group B: Millwork

Group B is millwork⁵, which includes wood windows, doors, mouldings and flooring. Group B does not include countertops, kitchen cabinets, non-structural overlaid panels or wood furniture which were excluded from the terms of reference for this report.

Ontario is well represented in several millwork products, as defined above. For example, it is the home base of one of the world's largest door manufacturers, Masonite International Corporation, formerly Premdor (Mississauga, ON). The headquarters of the Royal Group of Technologies is a major supplier of mouldings. The group recently expanded its plant capacity at Woodbridge, ON. Alexandria Mouldings is also a significant producer, notably in MDF mouldings. Sauder is another Canadian player, but most of its production capacity growth is in the US.

Within Ontario, the millwork sector does not depend for its supplies on the province's wood producing industries. The same "disconnect" is evident in the US where millwork plant locations are no longer tied strongly to domestic and traditional wood sources (e.g. Ponderosa Pine in the West). Windows and doors producers use wood, but also use extensive volumes of non-wood materials (e.g. vinyl, fibre-glass, metal and composites). In these products, Ontario competes with some of the world's other largest and most efficient manufacturers located in the Great Lakes states and elsewhere which have their strength in extruded plastics and metals, along with distribution, and which increasingly source their wood needs from overseas.

Despite the province's strong connection with the "marquee" names outlined, most of the high volume production manufacturing capacity of these larger firms is located outside Ontario and outside Canada. Masonite, for example, operates 70 plants in twelve countries. Just like Ikea in Sweden, the business has become global.

Among smaller businesses (SME's), many millwork businesses are family owned and entrepreneurial and are able to develop specialty and/or customized markets. Even so, they may have facilities outside Ontario or operate as branches of US and overseas firms. Custom millwork is labour-intensive and, by serving niche markets, the custom manufacturing sector within Ontario is one of the province's export market success stories.

Except for high-value specialty products, there appear to be no compelling industrial synergies between Ontario's millwork industry and its wood products industry. The windows and doors sector has few remaining linkages with the province's comparatively limited resources of high-value hardwoods. Other millwork has only weak linkages to the province's non-structural panelboards production (e.g. MDF) and very little direct connection, in most cases, with Ontario sources of hardwood or softwood lumber.

⁴ Volume 4 is available only to firms that have operations within Ontario. Please contact www.livinglegacytrust.org.

⁵ The kitchen cabinets, countertops and bathroom fittings sector is not included under millwork and was excluded from our analyses.

Masonite has an ownership position in Sacopan Inc, a joint venture which has links to a Quebec sawmill group and state-of-the-art plant producing wood composite moulded door facings⁶. But only about 10% of Masonite's requirements for MDF are purchased from Ontario – the balance comes from outside North America. Its requirements are for MDF components, not raw sheets, but Ontario does not appear to be competitive in these value-added areas.

There are some isolated instances of strong entrepreneurial flair within Ontario's primary wood products sector, for example, linking primary wood products with the millwork and wood flooring sector. Kruger has developed an innovative, water-resistant, sub-floor panel product called 'Dricore', using OSB, veneer and non-wood materials. There are few manufacturing clusters in northern Ontario available to support these types of initiatives and provide any significant degree of competitive leverage.

Technology Transfer

Through technology transfer, there is a potential connection between Ontario's millwork industry and its wood products industry. This is in the area of building systems. Specifically, Royal Building Technologies, a division of the Royal Group, has applied its non-wood technologies to build single family homes⁷ in the US and the potential exists for this initiative to be tied into Ontario's potential in whole building systems. On the other hand, Masonite, which since 1960 has operated one of the world's largest private wood technology laboratories with over 100 employees, chose to locate this facility in Chicago, IL. The balance of competitiveness in this respect appears to be in favour of the US Great Lakes as the leading-edge supply area.

We conclude, overall, that the millwork industry in Ontario is virtually a separate business from the wood product groups considered in this report. Domestic and US Great Lakes export market growth will continue to occur for Ontario's millwork manufacturers, notably in wood windows and doors, but in most instances, will not depend on, nor provide substantial growth opportunities for, Ontario's resource-based communities for the foreseeable future.

Table 2

Group B: Millwork Product-Market Opportunities

Sub-Sector	Ranking of Growth Potential for Ontario	
	Immediate Commercial Opportunities	Longer Term Potential
Doors including moulded wood & high-end wood doors	#1	#2
Wood windows including wood-composite combinations	#2	#3
Other millwork, including engineered wood flooring and/or sub-flooring	#3	#1

Source: Section B. For details of product and services opportunities, see Volume 4 *Opportunities Report*.

⁶ 'Masonite International Corporation Invests in Sacopan Inc.' CCN Mathews Press Release, Dec 9 2002.

⁷ 2002 Sales, Marketing and Builder Conference in Toronto. See www.royalgrouptech.com

Table 2 presents immediate and longer term priority rankings for the growth product opportunities identified in the Phase II reports. Columns should be read vertically. For immediate action, the best commercial prospects for Ontario are: (#1) high volume production doors and windows; (#2) customized doors and windows, and (#3) other value-added millwork. Discussion of these opportunities is provided in Section B of this report and in Volume 4.

Longer term growth options are: (#1) potentially strong growth in engineered wood floors and complete flooring systems (with value-added from installed sales); (#2) other millwork, and (#3) high production and custom wood windows and doors. Ontario has an opportunity to develop its higher value appearance hardwoods as face veneers in support of its millwork sector, and we recommend this for immediate policy attention in order to ensure longer term supply to the industry.

Group C: Factory-Built Housing

Group C comprises two distinct sub-sectors. HUD Code homes were developed in the US after 1973 through an inspired pre-emptive code that facilitated construction of plants and nation-wide shipment of low cost housing (mobile homes). These are defined by the HUD Code in the USA and by CSA Z240 standards in Canada. Large parts of the US capacity and production expertise in this technology are located in the Great Lakes.

A factory-based industry exists based on standard building codes for conventional housing (state and local building codes under BOCA, ICBO and, in future, the International Residential Code) in the United States, and by CSA A277 in Canada.

The modular industry includes residential producers, such as Guildcrest, Quality Homes and Royal Homes in Ontario and pre-cut home manufacturers, such as Viceroy, in which Ontario is well represented from a Canadian capacity viewpoint. The industry as defined in this report excludes modular non-residential housing and commercial portable structures.

Modular homes have several advantages but, as 3-dimensional structures, cannot be transported easily very far by road. In the US, combinations of pre-cut panelized components and modular sections are designed to meet transportation regulations and stay within state highway limitations and further scope exists for this approach.

Off-site fabricated panels subsequently assembled on-site are a faster growing technology than fully assembled modular homes or modular units. There is some potential overlap in the production of off-site fabricated wall panels by truss manufacturers and panelized components producers (see Group A products) and the capabilities of the factory-built housing sector. The latter focuses on design and manufacturing of complete buildings, but Ontario's pre-cutters and modular producers could become suppliers of panelized components sold directly to homebuilders in the US Great Lakes.

A shift from site-built construction methods to off-site and factory-built methods is underway. Panelized components and structural insulated panels in particular offer many advantages, and their share of North America's new housing needs will continue to increase. They consume significant volumes of lumber and, potentially, value-added building materials.

However, the reality is that the site-built homebuilding industry defines the pace at which this transition will occur. The US has many thousands of homebuilders. Consolidation is taking place. "Giants" such as Centex, Pulte, Lennar and KB Homes are emerging, but it is still a highly fragmented industry. Traditional site-based construction is a comparatively inefficient and expensive method of construction. Significant productivity gains are being achieved, in part, through the use of new materials.

Along with supply-chain changes, EWP and value-added building components are a key part of the site-built productivity gains. Eventually, homebuilders' need for per square foot cost

reductions will shift the momentum to off-site fabrication and factory-built approaches. These are important export markets for Ontario, but currently, the province's suppliers respond more closely to the larger market represented by the US site-built housing industry.

Today, leadership in factory-built components construction largely is in the hands of US based firms. Pulte is setting up its own regional component-supply centres nationwide and is a pioneer in offsite fabrication for the single family homebuilding industry (through Pulte Home Sciences) and may apply this also to the multi-family sector.

Within Canada, firms such as Mattamy Homes are pioneering linkages back to their own supply sources of panelized components. In modular and/or pre-cut technology, firms such as All American Homes, Wausau Homes and Genesis Homes are setting the technological standard. Ontario factory-builders lag behind the North American leaders, but with vision and concerted actions, the province has the potential to become a world leader in shelter technology.

A significant opportunity awaits Ontario if it can link its 'Group C' value-added manufacturing technology and market growth potential with slower growing structural wood products manufacturing firms in 'Group A', some of which have exceptional strengths in distribution, and mill efficiencies.

Table 3

Group C: Factory-Built Structures Product-Market Opportunities

Sub-Sector	Ranking of Growth Potential for Ontario	
	Immediate Commercial Opportunities	Longer Term Potential
Ontario's OSB, lumber, engineered wood (e.g. TimberStrand) and building components industry	#1	#1
HUD Code MH Structures [CSA Z240 units]	#4	#4
Residential Modular Housing [CSA A277 units]	#2	#3
Panelized Walls and Pre-Cut Homes [CSA A277 units] (excluding log homes)	#3	#2

Source: Section C. For details of product and services opportunities, see Volume 4 *Opportunities Report*.

Table 3 presents immediate and longer term priority rankings for the growth product opportunities identified in the Phase II reports. Columns should be read vertically. For immediate action, the best commercial prospects for Ontario are increased exports of primary wood products, structural EWPs and building components to the US Great Lakes factory-built housing industry. This is an

area where strategic alliances are very possible between the Top 5 US factory-builders and Top 10 US homebuilders, on the one hand, and Ontario wood products and value-added manufacturers on the other.

In comparison with the US Great Lakes factory-built housing industry, and its very competitive manufacturing clusters (e.g. Indiana), Canada's residential modular housing industry is small-scale and less able to handle the high-volume needs of large production builders. Export sales from Canada to the US Great Lakes have been strongest from the Atlantic Provinces and Alberta, but Ontario has several sizeable residential modular housing producers including firms, such as Royal Homes, where strategic links with US-based residential builder-developers (e.g. the English Village development in Detroit) have been created.

The Canadian industry, however, comprises single plant operations and is dependent on batch production of custom homes. Excellent knowledge-based design and engineering skills exist, but larger volume, multi-plant operations do not exist in Canada that can compare with, for example, All American Homes in the US.

Imports of HUD Code manufactured housing (CSA Z240) serve Ontario's domestic market, but no domestic capacity exists within Ontario. Imported supplies are dominated by large national US-based firms, such as Champion Homes and Fleetwood. Except as a branch-plant supply base for US-based firms, Ontario is not considered to have significant market potential in HUD code housing compared with panelized and residential modular (CSA A 277) factory-built homes.

Although growth in primary and value-added wood product exports to the US factory-built industry remains as the #1 longer term growth option in this sub-sector for Ontario, panelized components and pre-cut homes rank as a good #2 prospect. Modular housing ranks as #3 but, given the right policy actions domestically, also has prospects for sustainable longer term growth through technology leadership. This is unlikely, however, to grow out of the wood products industry itself.

Rankings Between Sub-Sectors

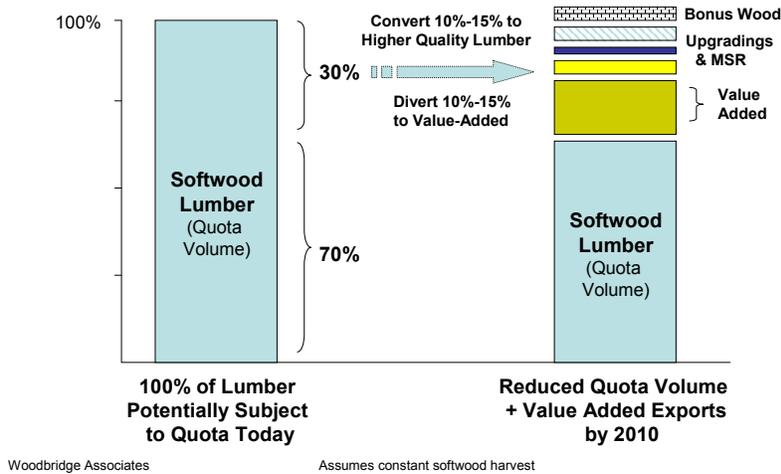
How do the three sub-sectors compare for growth opportunities? In our view, Group A, structural building products, present the highest immediate commercial priority for wood products manufacturing development within Ontario. Group C, factory-built structures, also has a significant ranking and, over the longer term, could even supercede Group A in terms of earnings growth and export potential. Group B products, comprising wood windows, doors and other millwork, will continue to be a significant value-added manufacturing and export activity within Ontario, but is not likely to compare in overall significance with Group A or Group C in terms of growth potential for the province's wood products industry.

Policy Implications

Key policy issues are raised by the market opportunities identified in this report. Among the most immediate and economically significant are the implications and impacts on Ontario's sawmilling industry of possible future softwood lumber quotas under a future "SLA II" .

Chart 5

**SLA II Can Force Positive Changes
 in Ontario Sawmills and Value-Added**



If the Ontario sawmilling industry is able to react affirmatively to a new quota environment and invest in a product upgrading, there could be a 'win-win' outcome. Up to 15% of lumber currently exported to the US eventually could be upgraded to products that, after further processing in Ontario, could be exported quota and duty free (Chart 5).

A further 15% could be diverted to value-added markets within the province and then exported in further processed form to export markets, including the US Great Lakes. While the latter would most likely be subject to quota if SLA II comes about, the Ontario industry would still have a net gain through its ability to sell higher grade products in a very tough marketplace.

Innovation, Technology and Cost Structures

To achieve this significantly increased emphasis on value-added manufacturing, the province of Ontario, through ministries such as Natural Resources (MNR) and Economic Development and Trade, need to establish the forest products manufacturing sector as a priority vehicle for profitable economic growth.

Potential linkages between the wood products industry and Ontario's construction industry are very relevant to this goal, and should be considered as a prospective initiative under other non-forest-sector competitiveness enhancing programs, such as *'Keeping Ontario Industries Competitive in the Global Marketplace'*⁸ which looks at the construction industry.

Consolidation of the wood products industry, which already is substantial in Ontario, is continuing to taking place in response to very tough global competitive conditions. The existence of fewer but more globally competitive national and international integrated manufacturing firms, with strong forward links into distribution, can work very well for Ontario.

⁸ See www.ontariocanada.com News Release, 'Eves Government Establishes Construction Industry Advisory Council to Increase Competitiveness and Help Create Jobs', Toronto, August 28, 2003.

But these firms would have to be global leaders in technology and new product development – not just low cost commodity producers.

We have ten recommendations. Additional details are provided later in this volume (see 'Recommendations').

Recommendations

- #1 Make the Phase I and II reports widely available to manufacturers.
- #2 Follow this up with other initiatives to communicate the market survey results.
- #3 Encourage Ontario's industry leaders to take action and develop a formal vision for the sector. Notably, to develop the competitive leverage potential that exists.
- #4 Ensure continuity of this process beyond 2003-04. LLT could play a key role.
- #5 Initiate marketing research and trade development for eastern SPF lumber, notably technical support and promoting the attributes of Ontario's black spruce.
- #6 Build a better data base of activities in Ontario's value-added sector.
- #7 Assess investment risks and CAPEX needs in the CEOs' vision action plan.
- #8 Involve economic development agencies and local communities.
- #9 Give high priority to skills training and related needs.
- #10 Link the CEOs' vision document and action plan to current initiatives already in process, such as the *'Ontario Forest Accord'* and *'Room to Grow'*.

This page is intentionally left blank.