

Clusters of Creativity:
Innovation and Growth in Montana

The Wood-Based Product Cluster

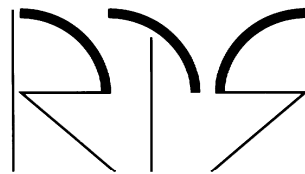
A Report to the Montana Governor's Office
of Economic Opportunity



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Opportunity on

The Wood Based Products Cluster



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Prologue: Industry Clusters in Montana

In the Spring of 2002, the Montana Governor's Office of Economic Opportunity embarked on a bold new direction in pursuing the state's economic development. After meeting with leading national experts and consulting with the Montana business community, the state's economic "stewards" embraced the most innovative and promising new approaches to developing good jobs, prosperous businesses, and a competitive Montana economy for the 21st century. The new approaches work from the simple premise that Montana's existing businesses are the state's most important assets. Their entrepreneurial energy and skills represent the state's most efficient source of economic growth. They have chosen to be in Montana for a reason.

This paper represents a single chapter taken from a report conducted by Regional Technology Strategies, Inc., (RTS) that was delivered to the Montana Governor's Office of Economic Opportunity in May 2003. It examines Montana's existing and nascent industries as a set of "clusters." A cluster is defined, in simplest terms, as a geographic region containing enough companies that have similar or related needs and interests to generate external economies of scale and produce innovation. Ultimately, these innovative businesses are likely to export more goods and services outside of the state, creating jobs and wealth for Montanans. To "supercharge" their potential and the state's economic wellbeing, economic development leaders at the state and local levels can focus on working together to organize the state's services in a way that helps them compete and grow, and help the businesses themselves organize to collaborate in ways that enhance their competitive standing. In tandem with this report, RTS also conducted an assessment of innovation and entrepreneurship support capacity within Montana's regions.

The study therefore focused on the questions: Which industries are the drivers of Montana's economy; where, if anyplace, are they clustered; how does this translate to advantage for the industries; and what further advantages can be developed to accelerate growth? The full report analyzes the state's assets and opportunities and recommends a set of cluster-based policies and strategies designed to strengthen its regional economies. It identifies existing and nascent clusters, assesses their strengths, challenges, and potentials, and recommends actions for building and elevating their respective competitive positions. The report also focuses on small, creative, and innovative businesses that are particularly important to Montana's economic success.

We have chosen to analyze six value-added clusters, which represent important regional economic drivers in some depth. The clusters were selected because (a) they already have a significant scale and therefore are important to Montana's overall economy and (b) they comprise very different kinds of industries in different stages of growth.

- The **creative enterprise cluster**, and the **experience enterprise and tourism cluster** encompass products and services and convert Montana’s unique culture, heritage, and natural resources into economic advantages.
- **Wood-based industries** and **food processing** are traditional industries important to the state for many decades.
- **Information technology** and **life sciences**—often grouped under the term “New Economy”—are ascendant clusters that have not yet reached their potential.

Some businesses cross the boundaries of these clusters such as agricultural biotechnology (agriculture and life sciences), or custom furniture design firms (wood and creative enterprises, complicating efforts to say just how much of Montana’s economy is involved in these ventures. Nonetheless, a rough estimate is that one-fourth of Montana’s business establishments and just under one-fourth of the state’s employees are involved in these clusters. Cluster members comprise a larger proportion of the state’s highest value-added industry and, we believe, are a significant source of its future growth.

In addition to the industry clusters examined by this report, many other industries employ large numbers of people and produce significant revenue. These include embryonic clusters such as aerospace, environmental technologies, and health care planners, as well as mature clusters such as oil and gas or metalworking. The goal of this report is not to be the “last word” on Montana’s industries of importance, but rather, to help Montana begin to build more effective structures and programs to work with the six clusters and empower the state to be a more effective partner to all of the state’s industries.

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The Wood Based Product Cluster

During the depression the Civilian Conservation Corp, formed to create jobs and teach skills, worked the forests across the Rockies. When the CCC wound down in 1938, a few entrepreneurial former corpsmen discovered a market in log homes, and started a company, which subsequently moved out of Montana. In 1946, National Log Construction re-founded the milled log home industry in the state and in 1957 Gallatin Gateway commenced production. But in 1972 a new owner arrived on the scene to create Alpine Log Homes out of a stagnant Gallatin Gateway and reinvented it by building with the more difficult to use but more authentic Montana handcrafted logs. His innovation was to prefabricate niche log homes out of these rough (and longer than standard) logs in modules at a single site, disassemble and ship them, and reassemble them on site. Ken Thuerbach was the innovator who developed the techniques, codebooks, engineering standards, and chinking methods. Alpine also proved to be a wellspring of entrepreneurship as employees left to start new companies in Montana and across the West.

Wood products has been and still is, despite recent volatility, Montana's strongest manufacturing sector in terms of employment. Although its biggest employers are multinational corporations, a majority of the state's companies are owned and operated by Montanans. The dominant position of the state's wood, log home, and furniture industries is a natural and evolutionary result of its vast forest resources and the crafts, skills, and knowledge passed down from people who have lived off the land and been accustomed to building and making things for themselves for generations.

Thus, the wood-based cluster has grown quite diverse. Today it consists of not only those who harvest the forests, cut and size the logs, or build homes, but also those who turn the wood into parts ready for assembly and into finished home and business products and art. While the state's harvests diminished during the 1990's due to timbering restrictions on federal lands, the higher value-added segments of the cluster continued to grow. Montana now has 358 companies that in some fashion manufacture products out of wood, with its strongest, fastest growing, and most competitive market niche in prefabricated log homes and other products made from authentic style logs. It is also home to a large number of companies that make kitchen, office, and household furniture, as well as products used by ranchers and farmers for outbuildings, fences and posts, and gates.

In the sector of furniture manufacturing, nationally, there has been a precipitous decline (more than 13 percent in employment in 2001-2002), due in large part to competition from China—which has built more furniture plants in the last three months than the U.S. has in the past ten years.¹ Yet Montana may be in better shape than most other states to survive and even grow because it has developed and maintained advantages with certain niche markets related to, for example, an outdoors, recreation-oriented, and rustic

frontier-style design. The state also has a large regional market for agriculture-related needs in both custom and mass-produced products for homes, ranches, and farms.

The vast majority of Montana's primary forest products are sold out of state—the largest percent to the 12 north central states. In 1998, 91 percent of lumber and sawn products and plywood, 99 percent of pulp and particleboard, 86 percent of log homes, and 54 percent of posts and poles were shipped out of Montana. Only four percent, however, were exported out of the country.

A Who's in the Wood Based Product Cluster?

The many core members of this cluster are linked together by the fact that the basic material they process is wood. Therefore, conventional Standard Industrial Classification or its replacement, the North American Industrial Classification System, can identify most of the members. This cluster spans all of the companies at the beginning of the supply chain that locate and cut down the trees and send them to saw mills or builders to those companies at the highest value-added, upper end of the chain that prefabricate homes, manufacture furniture, or carve intricate objects of art. Thus, the cluster is comprised of five sub-clusters: (1) loggers and mills; (2) log homes; (3) wood parts and products that go mainly into building homes or places of business; (4) furniture, home products; and crafts; and, in much smaller numbers, (5) pulp and paper. In 1998, the log homes, sawmills, plywood factories, and residue-utilizing plants accounted for 99 percent of the cluster's sales.ⁱⁱ Of Montana's total harvest of lumber, about 32 percent ends up as lumber of sawn products, 54 percent as raw materials for pulp and paper, 7 percent as plywood and veneer, 3 percent as miscellaneous products, and the remaining 4 percent as residue.

Loggers and Sawmills

The first class of firms in the supply chain, and the largest in terms of employment, is composed of the loggers who cut, and may transport, the logs; independent haulers; and mills that debark, cut, and trim the logs. Montana has 23 million acres of forested land and 27 native species of trees, mostly in the western half of the state. Thus, these firms, most of which are family-owned, represent an important source of employment and revenue, and supply the Montana companies further up the chain in terms of value-added. But many firms also sell outside of the state. The sawmills contract with loggers, who in turn may contract with haulers. Therefore, any reduction in mill activity (almost 20 have closed since 1990) reduces the demand for logs. About three-quarters of the lumber is produced in eight western counties, with Flathead accounting for about one-quarter of all production.

Log Homes

The fastest growing, highest value-added, most highly concentrated cluster is prefabricated log homes. From 1988 to 1998 production more than doubled in constant dollars (boosted by 37 new companies between 1993 and 1998) and has held its own

through the recent recession. The value-added is about three times the cost of raw wood. Montana has been the source of innovation for the prefabricated log home industry and is home to 79 companies that make log homes, mainly located in the Western region, with the highest concentration along I-93 in the Bitterroot Valley, sometimes called log home alley. Log homes can be seen in the assembly stage all along that route. In Ravalli County in 1999, despite reductions in logging activity on national forest land, 75 percent of all manufacturing employment was in lumber and wood products. In addition, by 1998 figures, the county was home to 28 companies making log homes or log furniture.

**Table III-1
Scale of Montana's Wood-based Cluster**

SIC	Sector	Establishments	Employees
2411	Logging	343	1,249
242-	Sawmills, planing mills	77	3,109
2462	Hardwood, flooring	4	120
2431	Millwork	29	415
2434	Kitchen cabinets	58	240
2439	Structural members, pallets	15	190
2448	Pallets	4	30
2452	Prefabricated wood homes	45	581
249-	Wood products	65	601
251-	Household furniture	37	363
252-	Office furniture	6	34
253-	Public building furniture	3	55
254-	Partitions, fixtures	7	53
259-	Draperies, blinds, shades	1	8
26--	Paper, cardboard	3	622
3931	Musical instruments	7	134
	TOTAL	704	7,803

Source: Montana County Business Patterns, 2001.

Note: The numbers from County Business Patterns, used in order to compare to national concentrations, are often undercounts. For example, the number of fabricated wood home companies is much fewer than the number (79) listed in state directories.

Wood Parts and Products

Wood is used to make a wide range of products, such as doors, window frames, cabinets, molding, and other detail, some of which may also become part of the log homes.

Perhaps the largest sub-cluster consists of companies making posts and poles for the rails, corrals, chutes, fences, gates for farms and ranches, and some farm and ranch buildings. But other wood manufacturing plants are classified as "residue utilizing."

These include wood pellets, decorative bark and paper, and particleboard. In 1998, these companies paid \$50 million to Montana sawmills and plywood plants for shavings, sawdust, bark, trim ends, and peeler cores.

Furniture and Other Consumer Products

Furniture, concentrated in the western and southwestern regions, includes rustic Montana-style log and limb furniture as well as finished chairs, tables, beds, and bookcases. Seven instrument companies, including a branch of Gibson Guitars, sell products through furniture or music stores, galleries, and the Internet. Furniture

companies are connected to builders through networks with interior decorators and architects. The largest number of companies manufactures kitchen cabinets, but the largest numbers of employees work in firms that make furniture for homes and offices. Many Montana furniture companies rely mostly on design for competitive advantage.

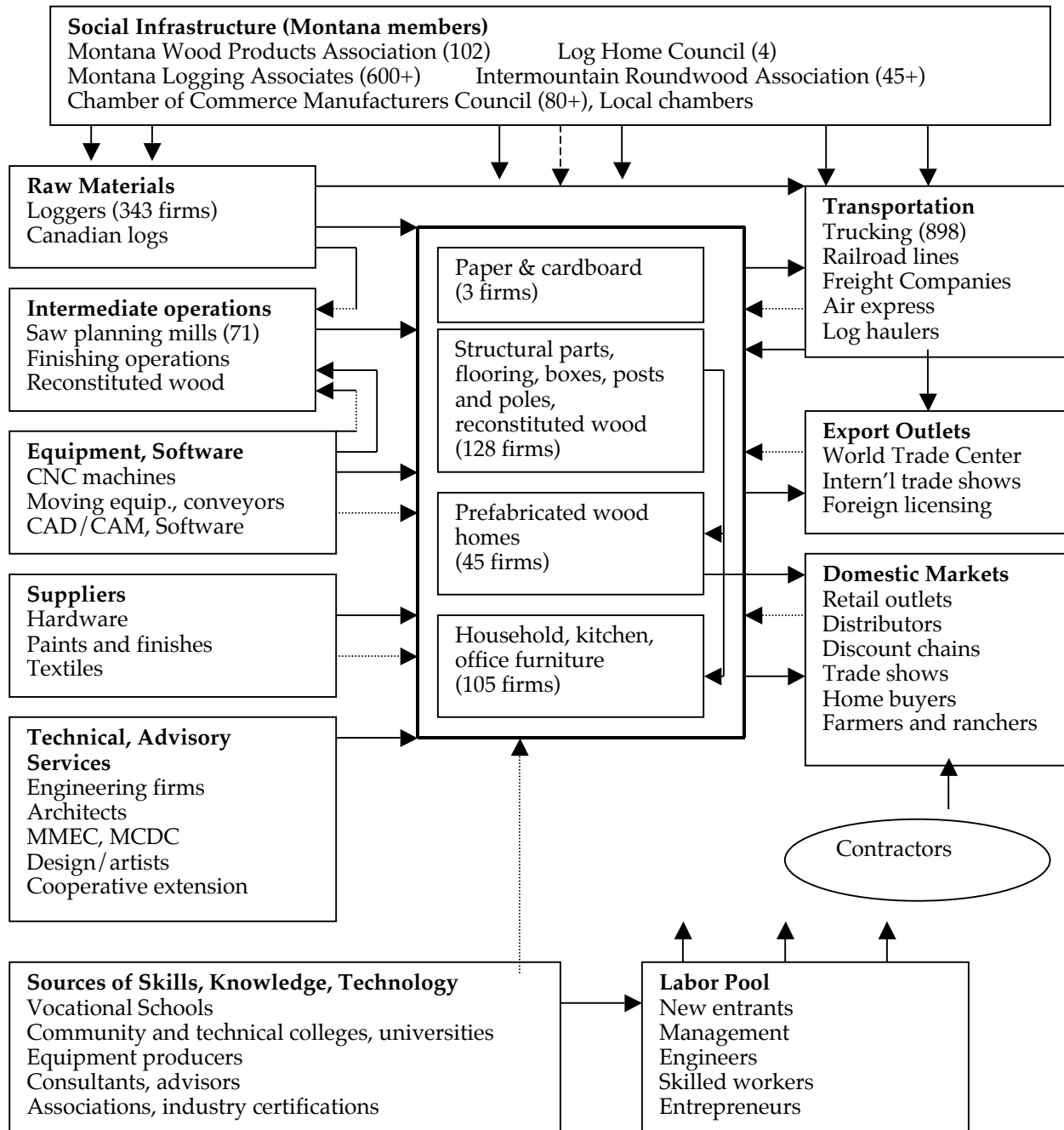
Paper and Pulp

Only three companies produce paper in the state, all in the western counties. But they are large enough to consume a substantial amount of wood and employ more people in those three companies than any other sub-cluster outside of logging and sawmills, which produces a high location quotient for the paper and pulp sub-cluster.

Table III-2				
Relative Concentrations, by Sub-cluster and Region, 2000				
Sub-cluster by Region	Employees	LQ	Firms	LQ
Logging/Mills				
West	3,256	18.6	299	11.2
Southwest	798	5.9	60	2.0
South Central	78	0.6	32	1.7
North Central	49	0.6	14	1.0
East	76	1.9	2	0.3
STATE	4,358	7.2	420	4.5
Wood				
West	752	2.8	36	2.0
Southwest	180	0.9	14	1.0
South Central	108	0.5	7	0.6
North Central	36	0.3	5	0.6
East	0	0.0	0	0.0
STATE	1,074	1.2	70	1.1
Prefabricated Wood Homes				
West	479	23.9	28	24.4
Southwest	59	3.9	9	9.5
South Central	11	0.7	5	6.2
North Central	32	3.3	3	5.2
East	0	0.0	0	0.0
STATE	581	8.4	45	11.1
Furniture				
West	209	1.3	39	2.5
Southwest	310	1.3	22	1.7
South Central	207	0.9	13	1.2
North Central	60	0.4	4	0.5
East	4	0.1	3	0.8
STATE	790	0.8	74	1.3
Pulp and paper				
West	622	3.9	3	1.2
Southwest	0	0.0	0	0.0
South Central	0	0.0	0	0.0
North Central	0	0.0	0	0.0
East	0	0.0	0	0.0
STATE	622	1.1	3	0.4
State Total	7,425	2.3	611	2.8

Source: ES-202 data and RTS, Inc.

Figure III Montana Wood Based Product Cluster



B Profiling the Cluster

Since many wood-based clusters in the U.S. have been studied (e.g., Maine, Michigan, Mississippi, North Carolina, Oregon), there is a wealth of information on which to benchmark this cluster. The following sections summarize strengths and weaknesses of the seven competitiveness factors.

Skills and labor

The loggers and mills are facing a skill shortage as their work forces age and fewer young people choose logging or millwork as a career option (there are no school programs for these occupations). The work is seasonal, arduous, and requires long hours—but pays well. Even though loggers and sawmill operators tend to have relatively low levels of formal education, they can expect a starting salary of about \$12 per hour.

The low formal education requirements, however, do not mean that these jobs do not require good basic, analytical, and problem solving skills. Modern logging is not simply going into the woods to chop down trees. As the task has become more selective, mechanized, and computerized, employees need technical skills plus certification as an Accredited Logging Professional, which must be maintained annually. The training to obtain the loggers certifications required by many mills includes knowledge of Best Management Practices, forest stewardship, safety, and harvesting systems.

The Montana Logging Association, which conducts the accreditation workshops, formed a joint task force with the University of Montana at Missoula's College of Technology to identify skill needs and develop a Western Montana Logging Program for incumbent workers. The tentative plan is similar to the national Regional Skill Alliance program, where groups of companies select employees to be trained with employees of other companies. Each module of training will result in a certificate of completion, accumulating toward a recognized industry credential. The content will include basic skills (i.e. math, computer usage, and electronics); knowledge of wood species and economics; forest stewardship; fire fighting management and equipment; and use of equipment support systems including hydraulics, diesel, and computerized systems.

Companies at the higher end of the wood cluster claim to have a sufficient labor pool. As in most clusters, companies look for people with some experience or who are mature (over age 25) and committed to learning the business. Of course work ethic can be a problem when hiring young people. They apparently lack the appropriate customer service attitude and have difficulty understanding the larger context in which the business operates.

Relevant educational credentials are not considered very important, perhaps because programs that award them (Table B-3) are rare or because the educational requirements are more easily learned on the job. In the log home industry, some of the new entrants have some college education that is not explicitly linked to the industry. For many jobs, basic reading and math through geometry is sufficient. Some entrants may have gone

through the Montana School of Log Building, a 25-year old school near Three Forks, just west of Bozeman, which teaches contractors, architects, engineers, and individual home builders how to build homes and start their own businesses. The program includes log selection, building codes and standards, alignment, framing doors and windows, roof systems, and care of homes.

Despite the available labor pool at the higher value-added end of the cluster, there are selected shortages of certain skills—such as workers who know how to program, modify, and repair the computer numerically controlled (CNC) equipment that is being used by an increasing number of companies. When equipment breaks down, according to one owner, “considerable time is lost waiting for qualified repair personnel—who sometimes have to be brought in from Canada.” Another technical skill that requires higher levels of education is proficiency of AutoCAD and 3D versions.

Since incomes are relatively high and the work lends itself to entrepreneurial and creative people, careers in the wood-based cluster are attractive. Workers can often find more innovative ways to achieve a desired outcome. As one manager said, “everyone [who works for us] is some sort of artist in his own right.”

Table III-3 Programs of Study at Educational Institutions and Student Completions, 2000-2001*			
Program	2-year	Certificate	Bachelors
Forestry/Forest Management	Salish-Kootenai (1)		U-MT-Missoula (4)
Carpentry/Bldg Technology	Helena COT (16) Flathead Valley (0) Miles (3) Ft. Peck (1) Blackfeet (2)	Helena COT (1) Flathead Valley (2) Ft. Peck (3) Blackfeet (5) Salish-Kootenai (8)	None
Logging Program	None	U-MT Missoula COT (under development)	N one

* Number of degrees awarded 2000-2001 in parentheses.
Source: Montana University System, 2003.

Relationships and social capital

This is not an industry given to associations, although there are a few state and national wood or log products associations that have formed to give the industry a collective “voice” (Table B-4). While many of the smallest companies are not active members and have shown little inclination to formally associate with one another as a cluster, and despite their fierce competition on some levels (such as bidding for lumber), there is also a sense that they share certain values and have common needs. In a close-knit community like the Bitterroot Valley, “everybody knows everybody” in the industry. As one owner said: “We used to think we were all enemies...now the best thing about our organizations is learning what someone else is doing and what may be beneficial to you. [We] still compete but understand the value of cooperation.” Another owner said: “It just helps to talk to other people about problems and possible solutions.” Sawmills

develop long-term network-type relationships with loggers, loggers with haulers, and log homebuilders with design and engineering firms.

Most of the association occurs when the local development agency organizes workshops or through chamber of commerce or association-sponsored events. In the Bitterroot Valley, for example, a “leads” group of business people meets semi-monthly to exchange business leads and information and to look for networking opportunities.

Organization	Members	Office	Services
Montana Wood Products Association	17 + 80	Helena	Lobbying, networking
Intermountain Roundwood Association	45 +	None	Exchanging information
Log Home Council (National)	4 from MT	Washington, DC	Log grading programs, financial services, home tours
Montana Logging Associates	600 + 78	Kalispell	Group benefits, profess. enhancement/certification, equipment sales, lobbying
Chamber of Commerce Manufacturers Council	80+	Helena	Lobbying, networking, general business info.

Source: Web sites, phone interviews.

Suppliers and services

Access to raw materials and supplies are important elements of this cluster, largely because the costs of transporting lumber are high and the use of native materials contributes to a form of regional branding that can increase a product’s market value. The proximity of the forests and logging is in part why the cluster developed in Montana. Timber harvests from federal, state, and private lands represent the state’s most important asset. Sources of lumber have been shifting over the past decade from public to private lands. In 1998, 71 percent came from private lands, 26 percent from public lands, and 3 percent from tribal lands. This continues a trend of decrease in percentage of timber harvested from public land, down from 44 percent in 1976 and 1988, and from 31 percent in 1993. Total harvests also have decreased sharply—from 1.2 billion board feet in 1988 to 1 billion in 1993 and 962 million in 1998. House logs and pulpwood relied the heaviest on public forests, with 50 percent and 57 percent respectively taken from federal and state forests. In 1993, for example, 83 percent of pulpwood came from public lands.

Some of the lumber goes directly to log home and furniture manufacturers and paper and pulp mills, while some goes to the saw and planing mills to be sold to lumber yards or directly to other wood product or furniture manufacturers. Other ingredients used in the final products, such as chinking materials, sealants, paints and finishes, bolts or spikes, metal hinges, fasteners, and stampings, and adhesives and sealants, tend to be

more standardized and easily purchased from anywhere in the world. For the homes, the chinking material is critical and local technical sales representatives work closely with the builders, including training workers in the application. Homebuilders might purchase locally some wood parts used in the design, such as staircases and railings. But standard home components such as doors, windows, and roofing are often left to the contractors and purchased near the building site.

Access to raw lumber is the biggest problem the industry now faces. Logging activity in the forests in and around the Bitterroot Valley fell by more than 50 percent between the 1980s and today, in part because the earlier level could not be maintained without degrading the forests. The companies now purchase about 90 percent of their raw lumber from Canada.

Design and engineering expertise is another important part of the supply chain, and the larger firms have designers and architects on staff. The smaller firms contract their design out to freelancers or small companies. Nearly all firms contract out the engineering review of designs to local people.

Markets and transportation

Transportation is vital to the movement of very large products, from raw logs to disassembled log homes, and good roads must be maintained. The harvesting of logs in Montana often (about half the time) requires helicopters to maneuver them to a road access point, where they are then transported by truck. Fortunately, Montana has a good road system, but transportation adds considerably to the cost of the raw materials and the completed home. The companies interviewed use common carriers—truck or truck plus rail. One owner complained that availability of trucking has decreased as the volume of trade has increased. He also explained that rail costs are high because of the non-negotiable fees required with each switch between rail companies along the way. The number of switches increases with distance, which decreases profits as markets expand.

The small to medium-sized enterprises (SMEs) in this cluster have limited capabilities for reaching markets outside their regions, and even less for reaching outside the country (see Inset III-1). Most use e-commerce and hope for a response, they may advertise in state magazines, and some attend trade shows. But the majority of companies that make commercial products have minimal proactive marketing capacity.

Inset III-1 Furniture New York New York, while not having a high concentration of furniture manufacturers, has a significant number of high-end furniture manufacturers and designers that have achieved scale through cooperation. The idea of an industry association called Furniture New York was born after the New York/New Jersey Port Authority hosted a conference with a trade association from Emilia-Romagna, Italy in the late 1980s. In 1990, 14 companies attended a trade show in Milan together and, with a small grant from New York's Empire State Development Authority, created a not-for-profit association to work together on developing export markets and to help members increase their business knowledge. In 1993, the group organized its own American trade fair. The key to the success was the strong connection between the production and design competencies in the area. More than a decade after inception, the organization is still flourishing. The companies meet monthly on topics such as cooperative advertising, Scandinavian design, e-commerce, finding space in a tight urban market, and strategic marketing. (www.furniturenewyork.org/main.htm).

Technology and innovation

The furniture and wood product companies use some CNC equipment, most of which is manufactured in Europe. State organizations such as Montana Manufacturing Extension Center (MMEC) are able to help some of the companies in assessing their technology needs and in organizing to use technology most efficiently (i.e., lean manufacturing). Between 1996 and 2003, the MMEC worked with 45 wood products companies and 20 furniture companies, comprising one-seventh of all firms assisted. For example, they helped Pine Ridge Log Furniture redesign their workspace and production systems to meet increased market demands and they helped Gibson Guitar adopt lean manufacturing methods. The Montana Community Development Corporation also has a wood specialist that has been working with the industry, to develop markets for small diameter wood, among other things. (See Inset III-2 for an example of wood industry collaboration to mutual competitive advantage.)

The competitive advantage of the companies is likely to come from design and innovative ways to customize the equipment to specialized needs. As one owner said: "The challenge is to make the machines do what you need. They are rarely designed for the task at hand." Another owner purchases farm machinery at auction that can be redesigned for his particular needs. Word of mouth is an important source of ideas. People hear from their peers at meetings and discussions about how other companies have retrofitted or reinvented equipment to match their needs and may, as a result, try something new.

Most of the companies use both e-commerce and e-business—the latter to transfer designs to get the necessary engineering certifications, but the benefits have been mixed, ranging from "the website is our survival" to minimal advantage. Broadband access is readily available to most of Montana.

Inset III-2: Modernizing Maine's Industry Maine's has one of the highest concentrations of wood manufacturers in the United States, with aspects of nearly all non-lumber and non-paper manufacturing of wood, ranging from sawmills and planing mills to un-upholstered furniture. Employing nearly 10,000 workers, most of the enterprises are small to medium-sized firms with fewer than twenty-five employees. Firms mostly focus on one or two narrowly defined products and are vertically decentralized in their production, buying raw or intermediate goods before adding value and selling to producers or final consumers. The traditional competitiveness and concentration of Maine's secondary wood products is rooted in the industry's proximity to low-cost, high quality timber resources and to plentiful semi-skilled labor. Manufacturers rely on a large pool of educated, semi-skilled labor willing to work at modest wages. Thus, Maine manufacturers have been able to compete with firms where labor was cheaper and capital more accessible, but which had to transport quality timber hundreds or thousands of miles before adding value. Over the last decade Maine's competitive advantages have been challenged by shortages in supply of high quality timber and record high prices. The industry, after a series of state-organized meetings, concluded that existing mechanisms for improving the position of the industry need to be better coordinated and packaged so that they are more accessible and relevant to industry. The state turned to a cluster strategy based on collaboration among wood products service providers to identify firms in need of assistance and channel services offered by the various collaborators. They formulated a "SWAT team approach" in which service providers representing different support agencies networked to more thoroughly and efficiently help firms modernize collectively. This integration of public and private resources increased service providers' receptivity to further strategies for cluster-based assistance and industry's knowledge of new technologies and techniques.

Entrepreneurship and capital

The growth of this cluster, which consists mainly of family-owned SMEs, many of which are "lifestyle" companies not prone to rapid growth, depends on entrepreneurial interests and abilities. Most of the log home companies are spin-offs from Alpine and its progeny, and most of the logging and wood processors are very small companies. One supplier said that most local turnover was due to the spin-off phenomenon where employees leave the parent organization to become their own independent contractors.

Capital does not seem to be a problem for most of the companies interviewed. The local banks seem to understand and appreciate the industry, participate in their associations, and meet most of the demands for venture and working capital. One owner assured us that "we've always used the local bank and they've never failed to help us." Another said "local banks have assisted this family business for more than 60 years." Not all had the same response though. One owner of an expanding company in the Northwest rated capital as extremely tight and hoped that as the economy improves it will loosen.

Equity and opportunity

This is an industry that is easy to enter for those with the ambition and interest. Salaries are fairly high, even with the seasonality of the work. There are no educational qualifications for those with any relevant experience, although some of the industry may require subsequent certification. It is also relatively easy for those who discover an untapped market niche to become an entrepreneur.

C Challenges and Possibilities

One challenge named most often is the reduction in and unpredictability of the supply of timber from the state. It affects the logging companies and mills most severely because the sub-sectors that use wood can purchase from Canada or Idaho, although it becomes less convenient and sometimes more costly. The unpredictability of supply also makes it difficult for companies to make capital investment decisions and modernize. A recent survey of post and pole firms found mixed reaction to increasingly aggressive Canadian competition and substitute materials (vinyl and steel): some reported a disadvantage and others found that their products' high quality and a consumer preference for U.S.-made goods has kept their customers loyal.

Another challenge is labor availability, which has been tight in the primary forest products industries in recent years, in part because the work is extremely physically demanding and seasonal.

Transportation also poses a continuing challenge. With a large proportion of the primary forest products going out of state, the cost of transportation is a major factor.

There are possibilities for market expansion through partnering with local artists to design finished products as well as through cooperative efforts between the tourism industry and companies making high-end wood products.

Small wood products companies and the log home industry would benefit from being part of the same distribution channels. Distributors can market unique, Montana-made wood products to the same customers who are looking for log homes with Montana style.

Harvest of small diameter wood in national forests is likely to increase. The Forest Service and others have done research on finding uses for small diameter wood. What is needed to complement the usage research is better harvesting techniques that are low cost, as well as more sawmills with machinery that can handle small diameter logs.

**Table III-5
Cluster Competitiveness Factors***

Factor	Rating	Comments
Skills & labor	7	Labor is in short supply; schools have few programs that target this sector. Most learning is informal or through private trainers. New initiative to work with COT to create new program.
Relationships & social capital	5	Strong associations and some informal networking, but companies still view each other mainly as competitors
Suppliers & services	7	Even though reductions in lumber supply and mills have consolidated, the cluster has strong supply chains.
Marketing & transportation	2	High cost, difficult to transport logs out of forests and to customers.
Technology & innovation	8	Adoption of new technologies by firms, support from MMEC and coop extension.
Entrepreneurship	4	Becoming more costly with mechanization, but support from banking industry, more common at high value-added end of market.
Equity & opportunities	7	Lack of formal education not a limitation and good paying jobs are available to anyone willing to do the work.

* This table is a subjective assessment of the factors compared to other clusters in the U.S., to the best of our ability, using a scale of 1 = low to 10 = high.

D Suggested Actions

The following suggested actions represent the thoughts and ideas of a large number of people interviewed, as well as knowledge of practices that have proven successful for wood-based industries in other places.

Establish a one stop resource center for the cluster

While the businesses have access to the research produced by the universities and a variety of different short courses conducted by extension services and Economic Development Councils, there is no single source that understands the industry and that they can turn to for all of their needs. A one-stop shop for the cluster would be a place that stores information (i.e. education and training, capital, distribution, marketing, technology and business planning), providing what is not available otherwise, and acting as a referral base to other agencies that meet particular needs (see Inset III-3). This entity would be staffed by individuals with industry experience and will work closely with existing associations and agencies to avoid overlap, while ensuring a quick response to business needs.

Action: Create and staff a Wood Competitiveness Center to work with existing associations to organize and coordinate information and expertise for easy access and to fill gaps in services.

Inset III-3: Kentucky Wood Products Competitiveness Corporation In 1994, the Kentucky legislature passed House Bill 561.154 creating the Kentucky Wood Products Competitiveness Corporation (KWPC) and the Kentucky Forest Products Council. Additionally, the legislation authorized incentives for three or more companies that would form flexible manufacturing networks.

The KWPC was thus formed as a municipal corporation and charged with disseminating information, providing services, developing workforce training standards, and providing financial support for new technologies. It was to be governed by a 13-member council from the industry, non-profit organizations, the Kentucky Economic Development Partnership, universities, the Workforce Cabinet, and the Kentucky Forest Products Council. The KWPC also established the Quicksand Wood Utilization Center for workforce training programs, management seminars, technical advice and assistance, and monitoring of the industry. In addition, the KWPC formed partnerships with three area technology centers and, through the Kentucky Community & Technical College System, established the:

- Wood Manufacturing Technology Center at Jefferson Community College for outreach, training, and technical assistance
- Wood Utilization Center at Hazard Community College and the University of Kentucky offering an AAS degree in Forestry & Wood Technology
- Advanced Wood Processing Center at the Kentucky Advanced Technology Institute in Bowling Green, which developed a CNC panel processing curriculum and awards an Automated Wood Manufacturing Diploma.

For more information, see <http://www.woodproduct.com/about.html>.

Organize learning and training networks

Companies value what they learn in their relationships with peers, but this happens mainly in accidental and haphazard ways. The forums that exist are geared more towards tackling common industry-wide problems, not specific business problems. But, organized learning networks that allow non-competing companies to meet and critique one another's problems have proven to be useful for small businesses in other states and in other nations. Small grants (or in-kind assistance) to help with the scheduling and facilitation would stimulate this kind of collaboration.

Training is one main area where collaboration can be beneficial. Even though degree programs are not required for most jobs, skills are important and short term training in the use of new technologies and techniques can make companies more productive. Since small firms in any industry rarely are able to support training, a common, cost-effective solution is to organize training for groups of employers. Other traditional clusters have successfully utilized training alliances in raising productivity and preparing new workers; such alliances could make training more accessible and affordable to Montana's wood-based companies.

Action: Provide modest incentives to the MMEC and to industry organizations to broker, and to firms to participate in, networks for problem solving or for developing their workers' skills.

Establish branding and a Montana Design Center

Montana has a brand for many of its consumer products. But this cluster also lends itself particularly to branding, such as, for example, Mountain Lifestyle Brand for log homes, mountain-style parts and accessories, products, furniture, and wood-based art.

Montana's wood-based cluster has a beneficial overlap with its arts and creativity cluster

that could be tapped in this endeavor. The combined creativity, experience and knowledge of artists and wood crafters working together to create a distinctive, high quality brand style, could be the key to forging an easily-marketable niche for Montana products. The brand can also follow “green label” specifications to gain market advantage. This would be particularly effective in exporting to Europe, where regulations are strict and the green label has taken on increased importance.

The brand might be solidified with a Montana Wood Design Center that highlights the creativity and quality within the cluster. The Center would attract attention, along with visitors, buyers, decorators, and builders. Whereas North Carolina and Mississippi have large furniture shows that attract tens of thousands, neither shows cuts across all wood products, from log homes to wooden bowls. This Center could be a showcase for one of the state’s best-known clusters, with its strength stemming from the state’s artistry. An aggressive marketing and exporting program that describes the interdependencies among firms in the cluster should complement the Center’s work. In Finland, for example, the National Board of Education collaborated with the Ministry of Trade and Commerce to launch a new furniture collection that emphasizes high levels of craftsmanship, ecology, and design.

Action: Establish a Montana Wood Design Center as a marketing and educational center with staff and a rotating short-term resident expert.

Inset III-4: Fine Woodworking Education The College of the Redwoods along the rural northern coast of California offers an intensive nine-month residency program and summer workshops that combine art and innovation with cabinetry and wood craftsmanship. The program has created its own elephant and chisel logo for its products, which it displays in seven fine art galleries in California and Long Island. The college attracts local students but also draws from all over the world, and the graduates, working in 20 states and 10 countries, maintain connections with others in their field through the college.

Create a competitive research and innovation grant program to identify new uses or markets for forest products

Such a program might be used, for example, to find new uses for small diameter wood or to find niche markets. Forest management involves thinning small diameter wood that is smaller than what companies generally process and use. Some of the new and emerging uses are engineered wood products such as an oriented strand board plant or long-fiber, high-strength, specially engineered lumber.

Action: This program may be best managed by a university but must have a simple application process, with peer review by industry people, not academics, to attract companies and non-academic individuals.

Make Montana parks roads and tourism offices showcases for Montana wood

The offices and camps at any state park facility or any tourist office or kiosk should be designed as a showcase of Montana wood and Montana design and art. Logs should be the standard for state supported buildings related to tourism and the interiors should

reflect the best of Montana art and design. A similar requirement was part of Kentucky's 1994 wood cluster legislation, which included provisions to "make state park facilities living showrooms for Kentucky-made furniture and other wood products" and for the state to "establish retail showrooms where Kentucky-made furniture and other wood products can be displayed for sale to, or order by, park visitors." The cluster ought to take full advantage of USDA's National Wood in Transportation Program to promote the use of wood for bridges, guardrails, signposts, etc.

Action: Require that Montana wood be used for all state park facilities and transportation structures; designer wood products should be used where possible.

Incubate new creative wood based enterprises

This is a cluster with a skilled work force and offering substantial opportunities for startups for those workers who are able to identify a market niche, particularly if it incorporates original design or form. Incubators can provide low cost space to develop a product and process within a supportive environment among firms with similar interests and possibly similar markets.

Action: Establish two incubators for secondary wood products companies in areas with large concentrations of wood manufacturing.

Inset III-5: Designing Futures in Australia The government of Western Australia, in an effort to take advantage of the fine regional woods, funded an initiative called Designing Futures. As logging in old growth forests declined, the government promoted a shift to high quality production of furniture and other wood products. Designing Futures created fine wood residencies, exhibitions, and commercial and experimental studios, and it teamed designers with wood manufacturers to develop more products. The goal is to redefine the future of the West Australia timber industry. A local vocational college is starting programs in design, marketing, and business development that will be offered online. See <http://www.designingfutures.con.au>.

**Table III-6
Benchmark Clusters**

Place	Approx. radius	Specialization	Approx. # of firms	Key assets	Competitive Advantages	Government Roles
Oregon (statewide)	100 mi.	Wood products	1,862	Trade association Port access	Access to Pacific Skilled workforce	Oregon Wood Products 1993
North Carolina (Hickory/High Point area)	60 mi.	Home furnishings	2,532	Skilled work force Quality of lumber Showrooms	Reputation Interstate access Access to suppliers Low wages	Business location incentives
Maine (state)	100 mi.	Wood products	324	Access to lumber	Timber supply Low wages	Technical assistance (MEP)
Kentucky (statewide)	100 mi.	None	956	Technology center with satellites at technical colleges	Timber supply Low wages	KY Wood Products Competitiveness Act of 1996.
Italy (Livenza River area)	20 mi.	kitchen, office furniture	800	Trade association Furniture school	Flex. Specialization Design	Industrial District Act of 1999
Denmark (Center in Salling)	80 mi.	Modern household	400	Technology Inst. Ass. of Furnit. Ind. Apprenticeships	Design capabilities Tacit knowledge	Indirect only
France (La Plaine des Vosges)	20 mi.	Chairs and chair frames	198	Reg. Vocational Lycee Prof trng assoc.	Artisan design Tacit knowledge	Lorrain Pole of Wooden Furniture Industries
Austria* (Salzberg, Upper Austria)	80 mi.	All types of furniture	290	Research labs Training centers Chamber of Comm.	Design Access to EU	Federal Economic Chamber support

* Not described in text

End Notes

ⁱ Denise Becker, "The Fight to Furnish," *Greensboro News & Record*, March 1, 2003.

ⁱⁱ Charles E. Keegan III, et al, *Montana's Forest Products Industry: A Descriptive Analysis 1969-2000*, Missoula: University of Montana September 2001.