# Mule Deer Windows

Business Plan 2004

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# 1.0 Management Team and Company Structure

## 1.1 Introduction

The Mule Deer Windows business plan has been developed as a financially beneficial solution to an ecological problem occurring in the UBC Alex Fraser Research Forest in Williams Lake, British Columbia. The Alex Fraser Research Forest has reported a change in forest type on their operating land base, which due to fire suppression over the last century has resulted in very high density of small diameter Douglas-fir trees. This forest type negatively impacts wildlife habitat and natural ecological processes.

The creation of the Cariboo Chilcotin Land Use Plan (CCLUP) has resulted in a management plan that incorporates commercial thinning as a harvesting technique. This will improve wildlife habitat and ecological processes and provide a new fibre source for local wood manufacturers. (For a more detailed explanation of the current issue in Williams Lake refer to Appendix A for the report from the research forest as well as the Wood 465 Handout).

In cooperation with the Alex Fraser Research Forest we have developed this plan for a financially beneficial business that operates from and can financially support the commercial thinning of small diameter Douglas-fir forests. Mule Deer Windows will produce custom Douglas-fir windows to supply the log home sector.

## 1.2 General Company Description

Mule Deer Windows will be situated in the Kamloops area of British Columbia. Mule Deer Windows will produce a range of custom Douglas-fir window options to supply log home manufacturers of mainly British Columbia and Canada. The fibre source for our company will be the UBC Alex Fraser Research Forest, where Douglas-fir is being commercially thinned to improve wildlife habitat and ecological processes.

The main objective of Mule Deer Windows is to develop a product that is economically viable. Added benefits of the company's objective include improved wildlife habitat,

ecological processes, employment opportunities in the Kamloops area and a market for a previously unusable resource on the Alex Fraser Research Forest.

## 1.3 Legal Information

Mule Deer Windows will be a small company in *Limited Partnership* with the UBC Alex Fraser Research Forest. Mule Deer Windows will control and manage the business and retain all economic profit. The Alex Fraser Research Forest has committed to maintain the fibre supply, in return for Mule Deer Windows covering the harvesting costs to support the improved wildlife habitat and ecological processes.

## 1.4 Financial Status

Section 5.0 of this document provides detailed information regarding the financial aspects of our business. This section provides information on interested rates, start-up costs and a break-even analysis.

At this time there are a number of financing options available. The *Canada Small Business Financing Act* (CSBFA) is currently being pursued as an option to obtain the capital required to start up the business. The CSBFA is a program offered by the federal Government of Canada to promote small business development. The program offers businesses with loans or capital leases of up to $250 000 to assist in financing fixed asset needs.

## 1.5 Management Structure

Mule Deer Windows has chosen a flat structured approach to management. The management framework of Mule Deer Windows will require advice from experts in the industry as well as financial advisors. We plan on being in constant communication with Ken Day, Manager of Alex Fraser Research Forest, to maintain a consistent fibre supply.
The company management structure will consist of an Ownership group, a General Manager and five departments, which are:

- Manufacturing (8-10 hourly employees)
- Maintenance (1 hourly employee)

- Materials Management / Purchasing / Marketing (1 salaried employee)
- Sales / Order Entry / Customer Service (1 salaried employee)
- Shipping/Receiving (1 hourly employee)

***Ownership Group***

The ownership group will consist of the founders of Mule Deer Windows, as well as the future financial partners of the company. The responsibilities of the Ownership Group are to ensure sound financial projections and investments.

***General Manager***

The General Manager will be responsible for planning and coordinating the operations of Mule Deer Windows. The General Manager's duties include managing daily operations, as well as planning and directing the use of each of the five department's materials and human resources.

***Departments***

Each department will have its own responsibilities that will be set by the General Manager.

# 2.0 Product Description

## 2.1 Product

We will produce custom manufactured Douglas-fir windows to supply the log home manufacturing sector. This will include a wide range of products including fixed, casement, vertical awning and bay with a range of style options from rustic to contemporary. Windows will be supplied unfinished to allow our customers to further customize their windows to meet their aesthete requirement.

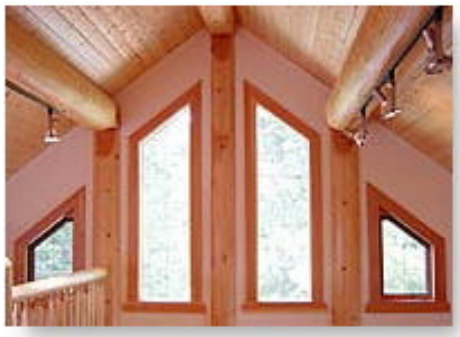

**Figure 1 Interior View of a Mule Deer Window (CWDM, 2004)**

**Figure 2 Exterior View of a Mule Deer Window (CWDM, 2004)**

For more pictures of Mule Deer Window Products see Appendix B.

## 2.2 Product Advantages

Our unique product and manufacturing structure provide a compelling set of advantages over competing window producers, proving Mule Deer Windows with a niche market that ensures the financial validity of the business.

### 2.2.1 Wood Components

Wood windows, and especially Douglas-fir, provide a number of unique and desirable attributes which make them appealing to consumers, particularly the log home market.

The following list was adapted from a report by Derek Thompson (2003):

- Energy efficiency
- Renewable resource utilization
- Design flexibility
- Corrosive resistance
- Interior warmth
- Durability
- Noise reduction
- Natural beauty

The Alex Fraser Research Forest is able to supply us with the necessary fibre we need. This fibre will be supplied without mark-up in return for the positive economic and ecological attributes achieved through harvesting, lowering our end costs. We would not be able to access a consistent, low, and equally unique timber supply from companies without paying a premium.

### 2.2.2 Log Home Market

We will not limit ourselves to supplying log home manufactures; conversely we will target this market that provides a unique marketing advantage for both log home manufactures as well as Mule Deer Windows. Customers choose the log homes due to their aesthetic uniqueness and custom design. Homebuyers can fabricate their own blueprints to meet their specific wants and needs. Since most log home manufactures only provide a log shell and do not provide finishing services, custom dimension windows are often not incorporated into log home design. We would be able to provide log home manufacturers with a custom designed window options to be incorporated into and provided with the end product. This provides log home producers using our windows with a competitive advantage, as they would have increased flexibility in log home design and the ability to meet more specific customer demands

### 2.2.3 Location Advantage

To adequately serve our customers and reduce distribution costs we will position ourselves in Kamloops, the centre of log home manufacturing in the province. This location serves as a vertical industry cluster. It provides a central location for our business and our customers, which has been shown to provide a competitive advantage (Porter, 1990). In total, 32% of log home manufacturers are located in the Thompson-Okanagan, the most of any region in BC (Houdek, 2001). Kamloops is also relatively close to the fibre supply, which is approximately 330 km from the Alex Fraser Research Forest. Kamloops also provides a positive attribute due to its location at the crossroads of

BC's major highways, the Coquihalla (Hwy 5), Trans Canada (Hwy 1), and Highway 97. Furthermore there are three major railways that service Kamloops; Canadian National, Canadian Pacific Railways, and BC Rail.

### 2.2.4 Environmental Advantage

We will position our company as an environmentally beneficial alternative in the window manufacturing sector. Using only small diameter Douglas-fir resources from the British Columbia's Caribou Region our business also provides a unique array of environmentally beneficial services incorporated with fibre supply harvesting and product production that separate our product from competition:

***Low Impact Harvesting Methods*** – Timber utilized is the smallest on the site, which is thinned out from under the overstory improving the aesthetic quality of the land base for recreation and tourism. The utilization of small timber also allows for the use of lower impact harvesting machinery minimizing negative environmental harvesting impacts.

***Improving Forest Productivity*** – Land use changes in British Columbia's Caribou have significantly reduced natural forest fire frequency resulting in unhealthy stand densities. Sites lose productivity and health as an increasing number of trees compete for water on moisture limited sites. Utilizing small diameter timber from thinned stands allows more dominant trees access to water improving stand quality and reduces the devastating risk that fire, disease and insects can bring to an overcrowded, unhealthy stand.

***Mule Deer Habitat –*** The Caribou supports a large mule deer population that is reliant on old growth Douglas-fir forests for winter range. These trees provide snow interception and food. Thinning out smaller trees from Douglas-fir stands allows for dominant trees to develop and provide increased winter range opportunity for mule deer.

***Environmentally Friendly Manufacturing*** – Wood windows are manufactured from a renewable, low production energy resource unmatched by metal and

plastic industries. In addition we will only use environmentally sensitive products and treatments in the manufacturing process.

## 2.3 Future Development

Being a custom manufacturer allows us to continuously monitor large-scale changes in the demands of our customer. In the appropriate situation we have the capacity to restructure our production line accordingly. We will also remain up to date in current market trends within the sector outside of our company and incorporate them into our product design. Some possible additions include French and sliding doors to our product line and a finishing department.

## 2.4 Possible Product Problems

Although wood window manufacturing is increasing in Canada so is plastic and metal window production, which provides a direct window substitute. Wood windows also require added finishing maintenance and upkeep that these substitutes do not. Our advantage over this competition is the desirable attributes of wood and our product, our niche log home clientele, our production cluster location, and unmatched environmental practices and benefits.

# 3.0 Marketing Plan

## 3.1 Environment

The British Columbia log home manufacturer industry has experienced constant growth during the last decade. The British Columbia log home manufacturers sales forecast for 2004 is $131 million. Most homes will be exported to United States markets where the estimate for the log home market is currently 2 billion dollars (Wilson, 1999). A British Columbia Log Construction Industry Survey reported that 14% of total gross revenue comes from sales of "associated products" such as windows and doors (Westcoast, 1999). This percentage is low since most log home manufacturers do not include windows and exterior doors in their building kit. Regardless, this percentage represents a $20 million sector. Furthermore, 90% of log homes are primary residences of consumers that are increasingly style and appeal oriented (Brooks, 2004). Internationally, consumers are located in high-income regions: United States, Canada, Japan, and Scandinavia.

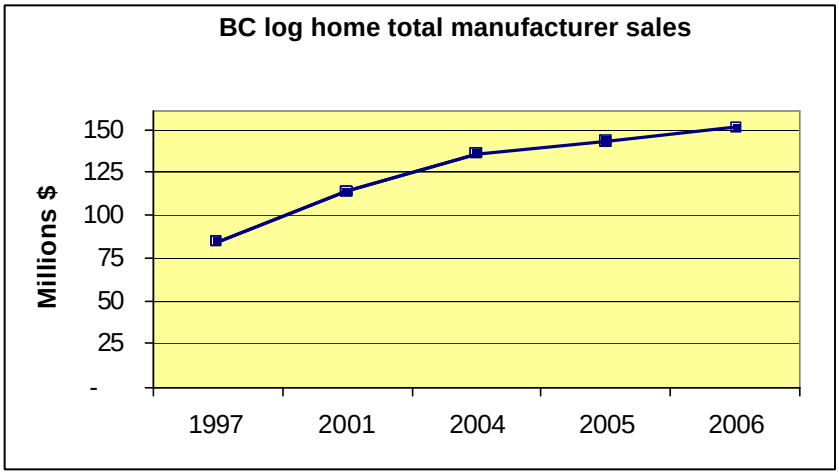


**Figure 3 BC Log Home Total Manufacturer Sales**

Wood window exports from Canada were reported at $158 million in 2002 and experiencing a growing trend since the 1990's along with the wood door market (Strategis, 2002). The United States is the major consumer of these products.

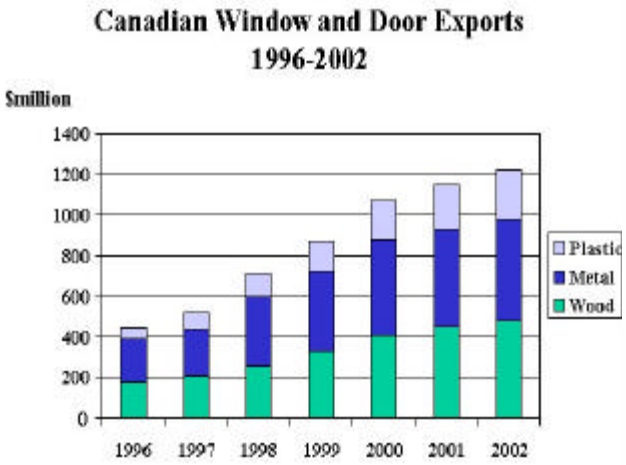


**Figure 4 Window and Door Export Growth by Type (Strategis, 2002)**

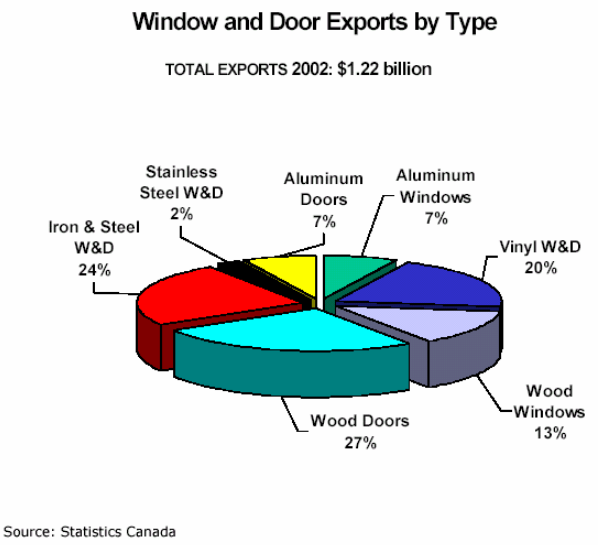


**Figure 5 Window and Door Exports by Type (Statistics Canada, 2002)**

### 3.1.1 SWOT Analysis

When designing a Marketing Plan it is useful to consider not only your own business, but also the businesses of your competition. A SWOT Analysis is one way to achieve this. SWOT stands for Strengths, Weaknesses, Opportunities and Threats. This type of analysis allows us to minimize our weaknesses and threats and maximize our strengths and make the most of opportunities.

***Strengths***

The custom window manufacturing market for log homes is unexploited. The production of log homes in BC will continue to increase, particularly from the demand in the US and a steady local market demand. An assured log supply guarantees that log costs will be constant and not subject to market forces. Since the log supply is coming from a research forest the stumpage will be extremely low. Goods can enter the life cycle of windows for log homes in the growth stage. The trend pattern from the last decade suggests growth and long-term profitability. Tight grain Douglas-fir supply is adequate for window manufacturing in its attractive figure, stability and durability properties.

***Weaknesses***

While the log supply is unlimited, the log quality will also vary. The result of variability in log quality is low yield from primary breakdown. Using a customized production system, that will have to be developed, it will be difficult to leverage profits from fixed costs particularly at early stages of the business.

***Opportunities***

The largest opportunity to come from this business venture is the unique position to offer a product that will provides environmental benefits such as improved wildlife habitat and ecological processes.

We currently have strong associations with local log home manufacturers in the Cariboo, the Okanagan and Greater Vancouver. The local manufacturing market currently offers enough space for production growth in the next few years.

***Threats***

Increasing environmental and certification requirements for raw materials may put downward pressure onto the industry. Initially profits will be low, resulting in tight cash flows and little flexibility.

## 3.2 Company

Mule Deer Windows is a custom manufacturer of windows for log-homes. Our product is offered directly to log home manufacturers. Mule Deer Windows will offer on site measurement (during log home assembly in the plant) to assure an accurate fit and even more so, customer satisfaction. Design and features will be determined by the consumer or from house designs.

Mule Deer Windows will exclusively use Douglas-fir logs resulting from thinning activities at the Alex Fraser Research Forest in Williams Lake, BC. Plant location will be in Kamloops, BC, where the highest concentration of log home manufacturers exists for the province.

Windows produced will become energy star certified as quick as the company is able to

achieve the required quality standards. Energy star certified windows must comply with two standards:

1. **U-factor**: Rate of heat transferred through window from the exterior to the interior of the house.
2. **Solar-heat-gain coefficient**: Amount of heat gained from the sun through the window.

**Figure 4 Energy Star Certification**

Energy star certification decreases heating and cooling costs particularly in areas where extreme temperatures occur.

Windows will also target to meet the five Healthy Housing essentials from the Canada Mortgage and Housing Corporation:

1. **Occupant health**: No emissions, therefore windows will be manufactured with water based adhesives and finishes (future addition to the manufacturing plant).
2. **Energy efficient**: Wood insulation properties, double/triple glass designs.
3. **Resource efficient**: Raw material provided from nearby region, increasing the long-term value of the Alex Fraser Research Forest and enhancing Mule Deer habitat.
4. **Environmental responsibility**: The use of water-based finishes will minimize Volatile Organic Compounds (VOC) emissions from the manufacturing plant. This will also entail a small logging operation to minimize impact.
5. **Affordability**: High value and durable products.

In today's market, knowledge-oriented consumers are willing to pay a premium for a more environmentally acceptable product. Both product qualifications mentioned above will meet the demand from this type of consumer. While it would be ideal to have both of these certification schemes immediately they cannot occur until the second or third year of operation. This will ensure competitiveness and market share gain.

Leadership in Energy and Environmental Design (LEED) is a Green Building Rating System that is voluntary, consensus-based national standard for developing high-

performance, sustainable buildings (LEED, 2004). The LEED standard is also being utilized for 2010 Winter Olympic development projects in BC. Developments with LEED certification for homes (LEED-H) will be followed closely to determine if there is a financially beneficial opportunity for Mule Deer Windows to participate in the regime.

## 3.3 Competition

Local window manufacturers have established a reputation and offer different choices of wood species. In particular, western red cedar made windows offer good durability and insulation properties and in some cases may be superior to Douglas-fir windows. Examples of such companies are Westwood Custom Windows and Doors and Custom Window and Door Millworks.

Large window manufacturers have highly specialized manufacturing operations that offer comparable quality at lower prices. However these commodity type producers lack flexibility regarding custom products. Aluminium window manufacturers offer more variety and long-term guarantees. For example Hurd Millwork and Loewen Windows are both companies that are well established and create a mass produced product.

## 3.4 Marketing Plan – Product, Price, Place and Promotion

The marketing plan that has been chosen for this product is based on the 4 P strategy, Product, Price, Place and Promotion, discussed in Wood 465 (Kozak, 2004) and COMM 465 – Introduction to Marketing (M. Le Roy, 2004).

### 3.4.1 Product

As discussed earlier Mule Deer Windows will produce Douglas-fir custom windows.
Our product is tight grain Douglas-fir with positive attributes for window construction. Mule Deer Windows will provide on site visits to determine exact sizes, and design models to customer requirements. Energy Star certification and the five specifications from Healthy Homes will result in a more socially acceptable product. We will also provide structural guarantee for the construction of the window. If the customer is not satisfied with the product, the company will refund the cost of the window.

### 3.4.2 Price

Value-pricing philosophy will be utilized in the long term. Initial pricing will be set at market price which will yield over 40% profit margin on material costs to recoup initial investment.

### 3.4.3 Place

The manufacturing plant will be located in Kamloops. The log supply will be moved by truck from Williams Lake. The initial focus will be on servicing the Kamloops area log home manufacturers to minimize transportation costs. In the future we will look to expand to the Cariboo and Greater Vancouver log home manufacturers. We will service new log home consumers directly if log home manufacturing company is located in the areas stated above. As the company grows, services will expand to North America and the Pacific Rim.

### 3.4.4 Promotion

***Advertisement:*** As the company grows and budget allows marketing will be expanded. Initially it will be informative to introduce the company. Our major focus will be on targeting green housing oriented consumers.

***Sales promotion***: Plant visits will be offered to exhibit products and product displays.

***Publicity:*** We are a member of BC Wood, Wood Manufacturing Council, Log Home Associations in North America and Canada Green Building Council. One major tool we will use to advertise will be the company website (www.muledeerwindows.com)

Mule Deer Windows will also offer summer employment positions for qualified students as we realize the importance of the growing workforce.

***Personal selling:*** We will have on staff an individual who will give oral presentations to local log home manufacturers.

***Target market:*** As previously stated, will include North American log home manufacturers. Our end user focus will be on individuals with high income (over

$100,000/year). We feel that individuals who use log homes as primary residence, value style, and aesthetics, green housing and environmental practices will be a good group to target.

# 4.0 Company Operations

## 4.1 Company Structure and Management Style

Mule Deer Windows is structured to be a flat organization. The chain of command is as follows. The General Manager will oversee the entire operation and will report directly to the ownership group. The General Manager will oversee manufacturing as well as several cells within the company. The following departments will report directly to the General Manager:

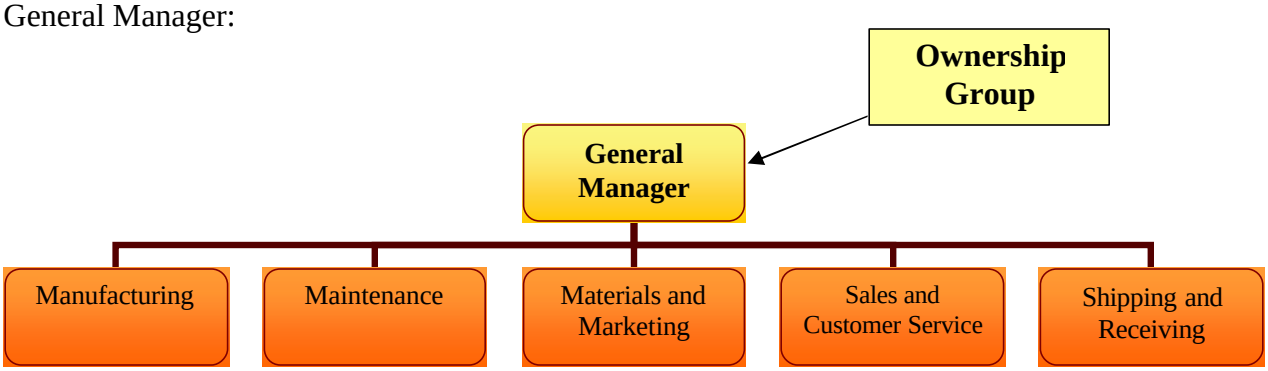


**Figure 5 Management Structure of Mule Deer Windows - Flat Organization**

- Manufacturing (8-10 hourly employees)
- Maintenance (1 hourly employee)
- Materials (Management and Purchasing) and Marketing (1 salaried employee)
- Sales (including Order Entry) and Customer Service (1 salaried employee)
- Shipping and Receiving (1 hourly employee)

This structure allows for a very short chain of command and hence good communication within the organization. The management team at Mule Deer Windows will stress inter departmental communication and continuous improvement as their mantra. Input from all employees is not only encouraged but also expected, as the company will strive to grow at a rapid pace during its formative years. The expected growth of Mule Deer Windows is 15% in the second year, and 10% in subsequent years. At start-up it is

projected that Mule Deer Windows will employee 3 salary staff in addition to 10-12 hourly employees.

## 4.2 Facilities

Mule Deer Windows will require a manufacturing plant approximately 10 000 sq ft. We will also require a small, attached office with sufficient room to house our non-manufacturing, operations staff. The ownership group has expressed a desire to rent/lease an appropriate facility in order to limit initial capital expenditure that would be required in the purchase of this type of facility. Several suitable locations are currently being viewed, and it is expected that the cost of the facility will be approximately $50,000 annually.

The production intensive process that Mule Deer Windows plans to use to produce windows will require a substantial capital investment in wood processing machinery. The following table illustrates the required equipment and estimated capital cost.

**Table 1 Required Commitment and Estimated Capital Costs**

| | Machine | Estimated Capital Cost ($CAD) |
|---|---|---|
| 1 | Gas powered Forklift | 10000 |
| 2 | Log Bucking Equipment | 2000 |
| 3 | Stationary Bandmill* | 50000 |
| 4 | Industrial Table Saw* | 20000 |
| 5 | Small Kiln | 50000 |
| 6 | Jointer* | 7500 |
| 7 | Planer* | 10000 |
| 8 | Shaper* | 10000 |
| 9 | Tiger Stop equipped Crosscut Saw | 15000 |
| 10 | Wide Belt Sander | 25000 |
| 11 | Cold Clamping Rack | 5000 |
| 12 | Finishing Dip Tank | 10000 |
| 13 | Pallet Jack | 2000 |
| 14 | Transport Carts | 5000 |
| 15 | QC Measurement Tools | 1500 |
| | Total | 223000 |
| | Allowance for Overrun and Misc. (10%) | 22300 |
| | Total | 245300 |

*Estimated cost includes cost of initial tooling setup

All production machinery will be amortized on a straight-line basis with an expected useful life of 10 years and a salvage value of 5% of the purchase price

## 4.3 Sales, Order Entry and Customer Service

As a small manufacturing company it will be necessary for the staff to be very flexible. One individual will be responsible for sales, order entry, and customer service. This will be possible because Mule Deer Windows will be taking job specific orders from a limited number of repeat customers, who will require personal sales attention to be satisfied. The satisfaction of each customer will be vital to our company's success; therefore customer service and customer feedback will be an important component of the sales person's job. Mule Deer Windows will guarantee 100% satisfaction and a limited warranty on all of its products.

## 4.4 Production

The following process will be used to produce high quality rustic windows for the log home market:

1. Offloading of raw logs for truck shipment
2. Bucking of raw logs
3. Bandmilling of logs into flitches
4. Flitches cut to width using the Table Saw
5. Lumber is dried to MC of 6 – 8%
6. Lumber is Jointed and planed to correct dimension and surface quality
7. Lumber crosscut to rough length
8. Lumber profiled if necessary to accommodate glass pane using Shaper
9. Lumber crosscut to final length using Crosscut Saw
10. Components wide belt sanded to final dimension
11. Mortise and Tenon joints machined when necessary using Shaper
12. Application of preservative/water repellent treatment using dip tank
13. Components assembled

The following materials will be required for the production of our windows and window frames. The following table categorizes and summarizes the cost of goods sold (COGS) for an average sized window of overall dimensions 4' x 4'. Detailed calculations can be found in Appendix C.

**Table 2 Required Materials for Window and Window Frame Production**

| | Material | Supplier | Estimated Unit Cost ($CAD) |
|---|---|---|---|
| 1 | Douglas Fir | UBC – Alex Fraser Research Forest | $26.00 |
| 2 | Double paned glass panels | Jeldwen | $150.00 |
| 3 | Hardware | | |
| | Hinges | Stanley Hardware | $6.00 |
| | Handles | Amerock | $10.00 |
| | Locking mechanisms | Defender Window Security | $7.00 |
| 4 | Weatherstripping | Tago | $12.00 |
| 5 | Adhesive / Sealer / Preservative | | $1.00 |
| | | Total COGS | $212.00 |

## 4.5 Inventory

Mule Deer Windows is strictly a make to order manufacturing center. This eliminates the need to carry any inventory of finished goods. However, in this process that requires multiple outsourced components, effective inventory management will be critical to overall profitability. The following manufacturing inputs will be inventoried in the following approximate quantities to satisfy one month's project production of 417 average windows. Douglas-fir inventories will average the total of 3 months production due to the need of hold inventory of lumber at different processing stages and large shipment sizes.

**Table 3 Inventory Requirements for 3-month period**

| Manufacturing Input | Value Inventoried ($CAD) |
|---|---|
| Hinges | 2,502 |
| Handles | 4,170 |
| Locking Mechanisms | 2,919 |
| Weatherstripping | 5,004 |
| Double Pane Glass Panels | 62,550 |
| Adhesive / Sealer / Preservative | 417 |
| Douglas Fir | 32,526 |
| Total | 110,088 |

Inventory management will be the responsibility of the Materials Management department. Bar coding will not be implemented at start-up due to high capital costs, but is a possibility for the future.

## 4.6 Distribution

Due to the custom nature of the business, Mule Deer Windows will use no intermediaries to deal with the customers. Delivery of goods will be at a charge to the customer and will be performed by an independent courier, customer pick-up, or delivery.

## 4.7 Billing

Due to the nature of the business, customers will be extended lines of credit based on their sales history and projected business potential. This will allow customers to receive and install product to ensure satisfaction prior to full payment. Penalty free payment is required within 30 days of product delivery. Interest at 18% per annum, compounded daily is issued on overdue accounts.

## 4.8 Contingency and Technology Planning

In the short run, Mule Deer Windows plans to maintain a lean, efficient, and simple manufacturing process. As the company grows in size and expands to produce different and more sophisticated products it will have to acquire new machinery capable of different functions. The management team will be encouraged to monitor the industry trends and the latest technological advances with a focus towards gaining a competitive advantage for Mule Deer Windows.

# 5.0 Financial Plan

Refer to Appendix C for the Income Statement, Cash Flow Statement and Balance Sheet.

The following assumptions where made in order to perform financial forecasting:

- Steady growth of log home building industry
- Annual company growth of 10-15%
- Access to financing as required by business plan
- Unlimited supply of timber at a steady cost
- Interest and Taxation as follows:

**Table 4 Interest and Taxation rates**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| Current Interest Rate | 4.00% | 4.50% | 5.00% | 5.50% | 6.00% |
| Long Term Interest Rate | 6.00% | 6.00% | 6.00% | 6.00% | 6.00% |
| Provincial Tax Rate | | | | | |
| Income < $300000 | 4.5% | 4.5% | 4.5% | 4.5% | 4.5% |
| Income > $300000 | 13.5% | 13.5% | 13.5% | 13.5% | 13.5% |
| Federal Tax Rate | | | | | |
| Income < $200000 | 12.0% | 12.0% | 12.0% | 12.0% | 12.0% |
| Income > $200000 | 21.0% | 21.0% | 21.0% | 21.0% | 21.0% |
| Total Income Tax | | | | | |
| Income < $200000 | 16.5% | 16.5% | 16.5% | 16.5% | 16.5% |
| $200000 < Income $300000 | 25.5% | 25.5% | 25.5% | 25.5% | 25.5% |
| Income > $300000 | 34.5% | 34.5% | 34.5% | 34.5% | 34.5% |
| % Collectible Accounts | 90% | 92.5% | 95% | 95% | 95% |

**Table 5 Start-Up Costs**

| | Estimated Cost ($CAD) |
|---|---|
| Manufacturing Equipment | 245,300 |
| Delivery Truck | 40,000 |
| Office Equipment | 20,000 |
| Office Furniture | 5,000 |
| Wages and Benefits* | 116,667 |
| Manufacturing Inputs* | 176,667 |
| Maintenance and Tooling* | 3,333 |
| Utilities | 1,667 |
| General Administrative Costs* | 1,783 |
| Advertising and Marketing | 5,000 |
| Facility Rental and Damage Deposit* | 13,333 |
| Total | 628,750 |

*Assume no positive cash flow for 2 months after start-up

## 5.1 Break Even Analysis

**Table 6 Break Even Analyses**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| Avg. Sale Price | $400 | $400 | $400 | $400 | $400 |
| Avg. Variable Cost / unit | $212 | $212 | $212 | $212 | $212 |
| Contribution Margin / unit | $188 | $188 | $188 | $188 | $188 |
| Total Fixed Cost | $828,535 | $902,510 | $978,704 | $1,067,831 | $1,165,678 |
| Break Even Units | 4407 | 4801 | 5206 | 5680 | 6200 |

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# 7.0 Appendices

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| Appendix A | Wood 465 Term Assignment Handout |
| Appendix B | Mule Deer Window product pictures |
| Appendix C | Income Statement, Cash Flow Statement and Balance Sheet |