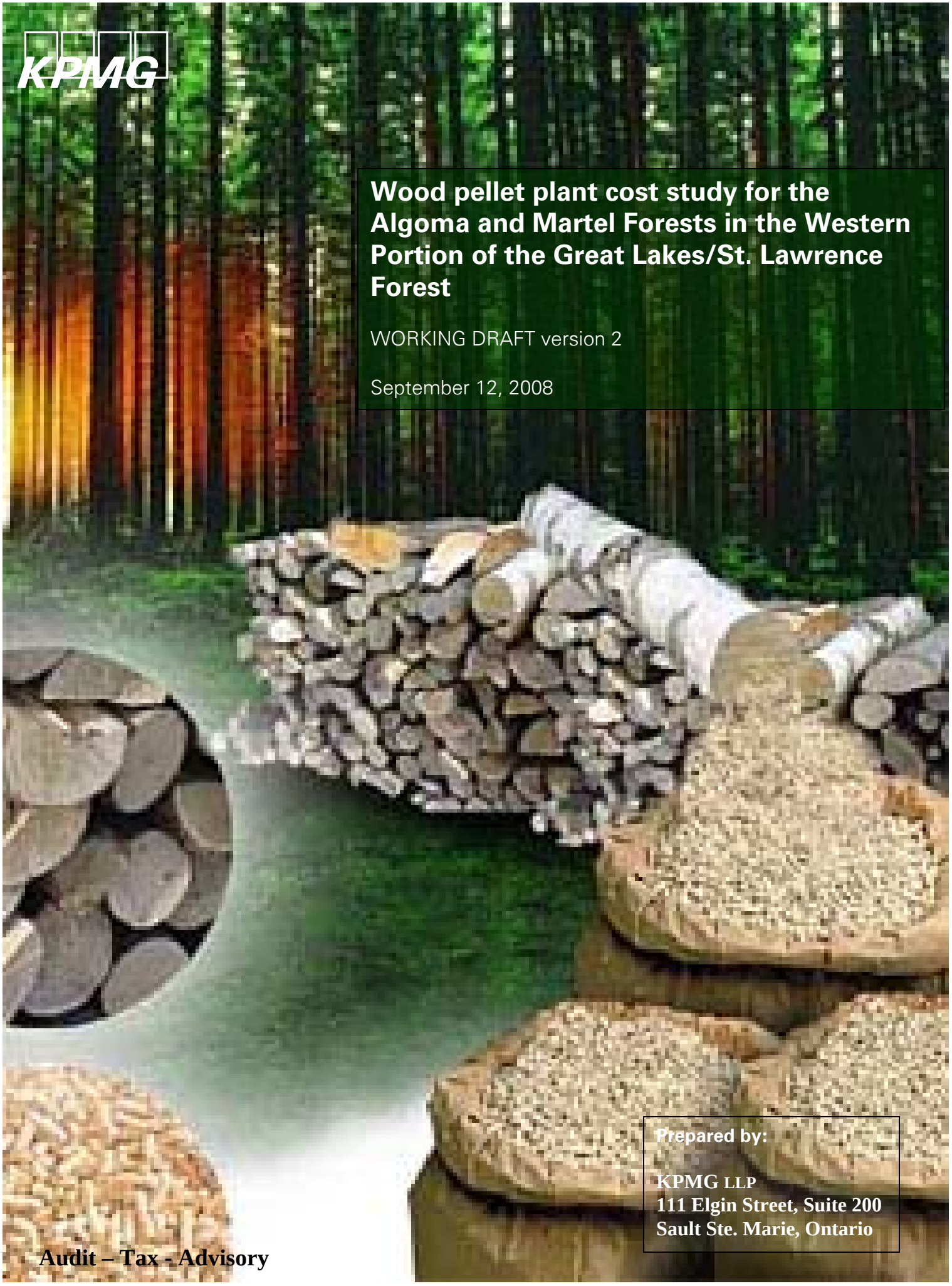

Wood pellet plant cost study for the Algoma and Martel Forests in the Western Portion of the Great Lakes/St. Lawrence Forest

WORKING DRAFT version 2

September 12, 2008

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Audit – Tax - Advisory

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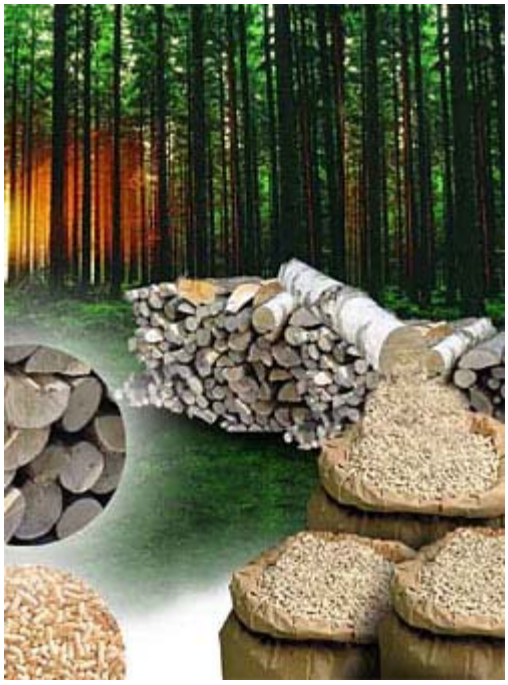


Background

The Ontario Great Lakes/St. Lawrence Forest Region (GLSL) has an abundance of both provincially owned (Crown) and patent forested land (Private). This region, similar to other forest regions, has suffered from recent closures of forest based industries resulting in challenges for forest land managers to sell all timber products.

An opportunity exists to utilize the lower quality timber resources for wood pellets. Global demand for wood pellets is seen as rising as an alternative energy form. Climate change concerns have contributed to opportunities to produce wood pellets in Ontario from the GLSL lower quality wood resources.

Ontario's action plan on climate change "Go Green" has targets for the reduction of green house gas emission. Other studies have suggested that green house gas emissions could be reduced by co-firing wood pellets into existing coal fired electrical power plants.

Wood pellet production process and end users

Wood pellets are a type of wood fuel, generally made from compacted sawdust and other forestry related biomass. They are usually produced as a byproduct of sawmilling and other wood transformation activities. This study considers the production of a pellet from round wood sources, which involves the harvest of low grade trees for their fibre content. The pellets are extremely dense and can be produced with a low humidity content (below 10%) that allows them to be burned with very high combustion efficiency. Further, their regular geometry and small size allow automatic feeding with very fine calibration. They can be fed to a burner by auger feeding or by pneumatic conveying.

Their high density also permits compact storage and rational transport over long distance. They can be conveniently blown from a tanker to a storage bunker or silo on a customer's premises. Most of the pellets consumed currently are for home heating in wood pellet stoves. A large number of models of pellet stoves, central heating furnaces and other heating appliances have been developed and marketed since about 1999. With the surge in the price of fossil fuels, the demand has increased all over Europe and a sizable industry is emerging. Industry is now looking into other uses of the pellets including co-firing with coal in electrical generating stations resulting in fewer emissions.

Production

Low grade trees are harvested in a convential manner by feller-buncher. A delimber processes the felled trees to treelength form which is hauled to the pellet mill location to be ground into a wood biomass. Tops and branches of the felled trees are ground to biomass in the forest using a portable grinder prior to being hauled to the pellet mill. Pellets are produced by compressing the wood biomass which must pass through a hammer mill to provide a uniform dough-like mass. This mass is fed to a press where it is squeezed through a die having holes of the size required (normally 6 mm diameter, sometimes 8 mm or larger). The high pressure of the press causes the temperature of the wood to increase greatly, and the lignin plastifies slightly forming a natural 'glue' that holds the pellet together as it cools. A similar process is used for the production of wood briquettes which are a larger form of

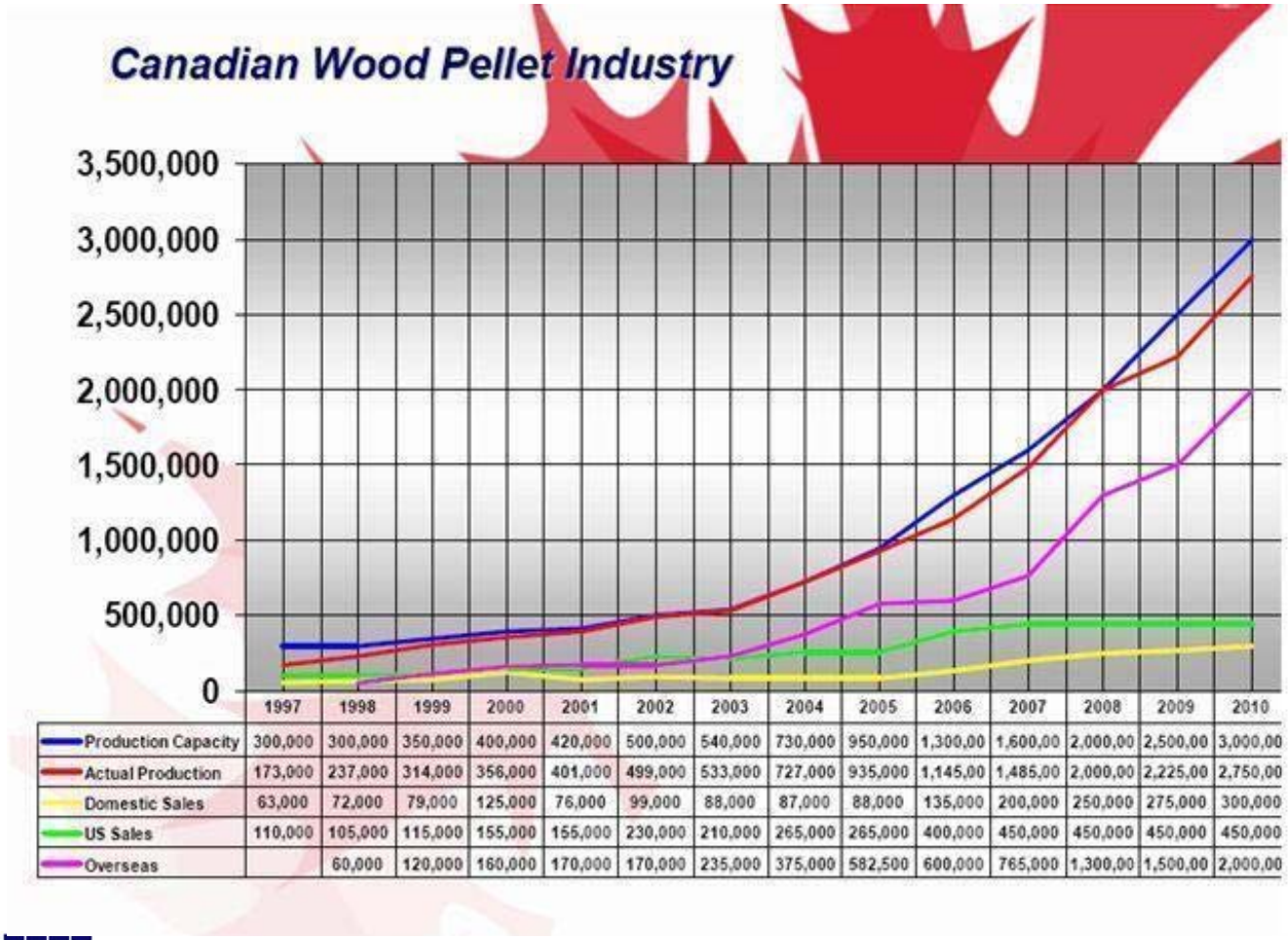
pellet, two to four inches square. The production of briquettes versus pellets is relatively similar in costs.

Pellets conforming to the norms commonly used have less than 10% water content, are uniform in density, have good structural strength, and low dust and ash content. Because the wood fibres are broken down by the hammer mill, there is virtually no difference in the finished pellets between different wood types. Pellets can be made from nearly any wood variety, provided the pellet press is equipped with good instrumentation, the differences in feed material can be compensated for in the press regulation. Current producers utilize forestry residuals such as sawdust and shavings, etc., obtained at relatively little or no cost. This study considers the use of roundwood, including tops and branches, harvested from assigned and not utilized, unassigned operable timber stands which will result in increased harvest costs for the feedstock.

Pellets conforming to the above norms cannot contain any recycled wood or outside contaminants. Recycled materials such as particle board, treated or painted wood, melamine resin-coated panels and the like are particularly unsuitable for use in pellets, since they may produce noxious emissions and/or uncontrolled variations in the burning characteristics of the pellets.

Opportunities to develop a wood pellet industry in Ontario

The following graph indicates the exponential growth in the wood pellet capacity and production in Canada. Most of the growth comes from European countries that are looking to Canada to produce wood pellets for consumption overseas. Considering the production and use of wood pellets in Europe, Canada has considerable room to grow this market to meet demand and more fully utilizing this renewable resource.



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Production Capacity	300,000	300,000	350,000	400,000	420,000	500,000	540,000	730,000	950,000	1,300,00	1,600,00	2,000,00	2,500,00	3,000,00
Actual Production	173,000	237,000	314,000	356,000	401,000	499,000	533,000	727,000	935,000	1,145,00	1,485,00	2,000,00	2,225,00	2,750,00
Domestic Sales	63,000	72,000	79,000	125,000	76,000	99,000	88,000	87,000	88,000	135,000	200,000	250,000	275,000	300,000
US Sales	110,000	105,000	115,000	155,000	155,000	230,000	210,000	265,000	265,000	400,000	450,000	450,000	450,000	450,000
Overseas		60,000	120,000	160,000	170,000	170,000	235,000	375,000	582,500	600,000	765,000	1,300,00	1,500,00	2,000,00

Source: the Canadian Wood Pellet Association

Study requirements

KPMG's study of the costs of a wood pellet plant in Northern Ontario was undertaken pursuant to the terms of our engagement letter with the Clergue Forest Management Inc. (Clergue) dated July 9, 2008, which reflect the terms of reference for the engagement established by the Ontario Ministry of Natural Resources (Ministry). As outlined in the engagement letter, the expected deliverables stemming from the review include:

- Review of fibre supply and harvest costs provided by the SFL manager and the Ministry of Natural Resouces;
- Perform an analysis of proposed site locations and recommendations;
- Obtain, calculate and determine reasonability of capital, operating and financing costs associated with the project;
- Research and consider synergistic opportunities and other considerations.

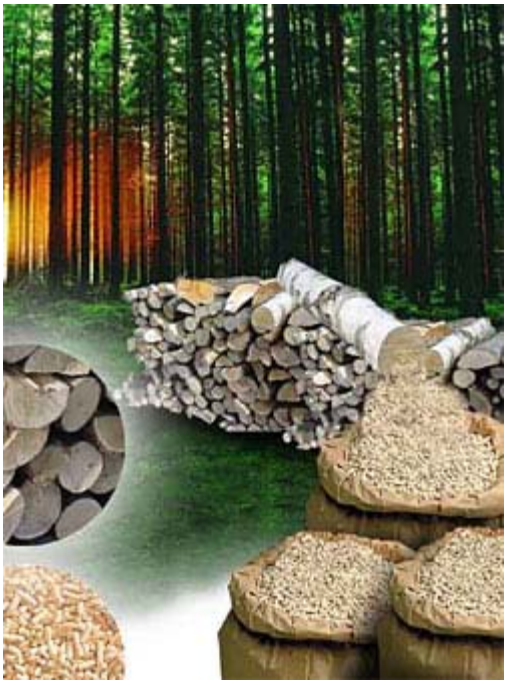
Restrictions and Qualifications

This report is strictly confidential and is for the purposes of briefing Clergue, the Ministry and other parties who may later become involved in this matter on behalf of the Ministry. This report is not to be relied upon by any other party and is not otherwise to be published, circulated, referred to, quoted from, reproduced or used for any other purposes or by any other party without KPMG's prior written permission in each specific instance. We will not assume any responsibility or liability for any costs, damages, losses, liabilities or expenses incurred by any party as a result of the circulation, publication, reproduction, reference to, quotes from, use of or reliance upon this report.

We reserve the right (but will be under no obligation) to amend this report and advise accordingly in the event that, in our opinion, new material information comes to our attention that may be contrary to or different from that which is set out in this document. Comments in this report should not be interpreted to be legal advice or opinion. The contents of this report reflect our understanding of the facts derived from the examination of documents provided to us and interviews conducted by us.

The information contained in this report has been compiled from information provided by the Ministry, Clergue and various forest industry individuals. We have not audited, reviewed or otherwise attempted to verify the accuracy or completeness of such information. Readers are cautioned that this information may not be appropriate for their purposes.

This report includes or makes reference to future oriented financial information. We have not audited or otherwise reviewed the financial information or supporting assumptions and as such, express no opinion as to the reasonableness of the information provided.



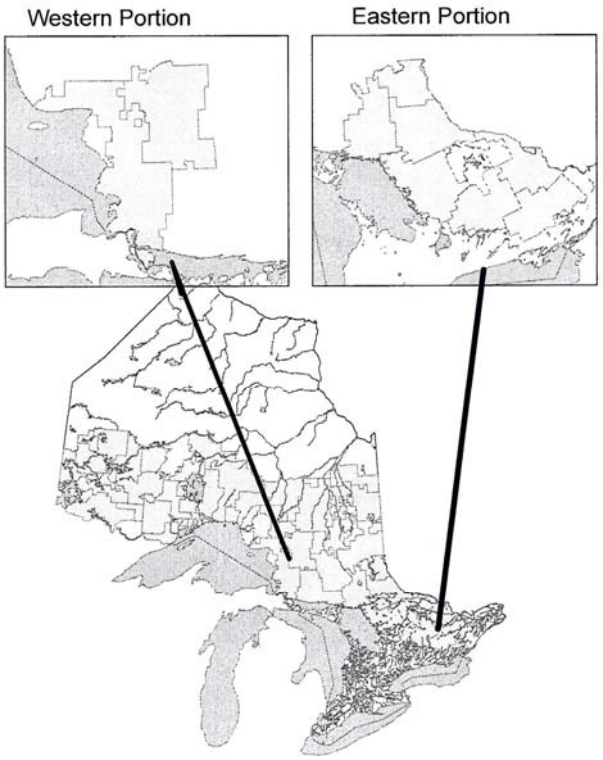
Fibre Supply

The fibre supply for the North Western portion of the Great Lakes St. Lawrence Forest for this study has only considered two forests sustainable forest licenses (SFL) known as the Algoma and the Martel forests. The SFL managers have supplied annual total harvest volumes including, assigned volumes, assigned but not utilized volumes, unassigned operable volumes and unassigned volumes from inoperable areas. The SFL volume charts have been reviewed by the Ministry for reasonableness. There are other forests in Northern Ontario that may have significant volumes of fibre which are outside the scope of our study.

For the purposes of this study an estimated conversion factor of 1.94 cubic metres of green fibre at 50% moisture is required to produce an oven dried tonne of wood pellets. This conversion factor is for all species and will vary depending on the mix of fibre. For the purposes of this study we have used this conversion factor to determine the size of the facilities to be developed and their location to the proximity to the fibre supply.

Overview of the region being covered

This study is focused on the Western portion of the map illustrated below:



Forest Stewardship Council Certification

Both the Algoma Forest and Martel Forest are certified under the Forest Stewardship Council (FSC) certification for sustainable forest management practices. Products carrying the FSC label are independently certified to assure consumers that they come from forests that are managed to meet the social, economic and ecological needs of present and future generations.

Algoma Forest

The Algoma forest is located in the Algoma district of Northern Ontario spanning from Sault Ste. Marie in the south and Wawa in the north. The forest covers 8,577.1 km^2 of land with 7,999.3 km^2 of productive lands. For the purpose of this study, the fibre availability in the Algoma forest was limited to the land area located north of the Montreal River as the fibre south of the Montreal River has already been committed or assigned to current operating mills.

Available suitable species

The Algoma forest is home to many hardwood, tolerant and intolerant, and softwood species primarily spruce, pine and fir.

Roundwood:

The following table summarizes the total annual fibre supply (white wood) from the Algoma forest for all users:

Description of Fibre	Volume (m^3/yr)[1]	Comments
Assigned (currently being utilized)	111,262	Multiple species - Currently being utilized by Shareholder mills - not available for biofibre
Assigned (not being utilized)	68,852	Poplar & white birch that could be available for biofibre if Weyerhaeuser OSB mill closes permanently
Unassigned Operable (assume 85%)	27,796	Low grade tolerant hardwoods - Available for biofibre
Unassigned Inoperable (assume 15%)	4,905	Inoperable – not available for biofibre

[1] Volumes derived from 2005 Forest Management Plan for Algoma Forest and Schedule "A" of Clergue Shareholder's Agreement (Allocation of Forest Resource Table for Wawa area 2005-2010)

The fibre that is potentially available on the Algoma Forest (north of the Montreal River) for the purpose of this study is:

- Assigned poplar & white birch that is currently not being utilized; and
- Unassigned operable tolerant hardwood.

Tops, Branches and Bark:

Description of Fibre	Volume (m^3/yr)[2]	Comments
Roundwood bark	10,631	Available for biofibre from the available roundwood noted above and not include in the volumes (assumed at 11% of volume and use as hog fuel only)
Tops & Branches (from assigned)	27,017	Available for biofibre (based on OMNR biofibre study estimate that tops & branches are 15% of roundwood volume)
Tops & Branches (from unassigned operable)	4,169	Available for biofibre (based on OMNR biofibre study estimate that tops & branches are 15% of roundwood volume)

[2] Estimates based on OMNR biofibre study which assumes tops & branches are 15% of roundwood volume.

Private forest harvest opportunities

The Algoma forest is home to a number of private landowners and harvesters. While the study is focused on the availability of fibre from crown land, there is an opportunity to access additional sources from the private landowners. In discussions with a number of the private landowners, two companies have indicated that they have fibre available from their properties in the form of tops and branches amounting to approximately 47,000 m^3 per year that may be available for this project. However, for the purposes of this study these volumes have not been included in the calculation of available fibre.

Further to the availability of fibre in the form of tops and branches, there may also be a potential to purchase roundwood from the private landowners, however, neither of the parties contacted expresses an interest in including it as a potential for biomass.

Aboriginal Harvest Opportunities

Potential opportunities for long-term economic benefits to local Aboriginal communities may be created as a result of the increased utilization of forest resources.

Harvest cost to roadside

Harvest cost to roadside includes all costs associated with the removal of the tree at the stump and skidding out of the forest to a landing area for further processing. The process would include the use of a feller buncher and skidder. Whole trees are felled in the forest and may or may not be delimbed, depending on the species of tree and the cutting method. Usually, in selection harvest methods for hardwoods, delimbing takes place at the location of the felled tree. Whole trees are not skidded to a landing area as this would cause damage to the existing trees which are not to be harvested. In other harvesting methods the whole tree can be skidded to the landing, where it is delimbed and processed into treelength roundwood. The treelengths are then hauled to the pellet mill location for grinding. Tops and branches would be ground at the landing as it would be impracticable to haul these to the pellet mill. Instead the ground wood is hauled in chip vans to the pellet mill resulting in additional costs for this process as the grinder is powered by diesel fuel and is less efficient than a larger capacity electrical grinder.

The total harvest cost is $35.65/m3. The cost of each activity or item is broken down as follows:

Activity/Cost Item	Cost ($/m3)
Harvest to road side	$19.00
Slashing	$4.80
Cleanup/Delimbing	$4.80
Sort yard/reload	$2.20
Forest Camps & Commuter Costs	$2.10
Overhead Allocation	$2.75
Total	**$35.65**

We have also assumed that the fibre will be harvested by a third party contractor and not by the pellet mill employees.

Grinding costs

The ability to haul tree length roundwood to the pellet mill for grinding is more efficient than grinding in the forest. A logging truck can generally haul 20 to 25% more tonnage in wood than in chip or ground form in a chip van as the weight of the whole tree is denser than the chips. Mill location grinding would utilize an electrically powered grinder and will consume the whole treelength.

Grinding for tops and branches is most effectively done in the forest to take advantage of the most efficient means of transporting them to the roadside. Even though there is an added cost of grinding in the forest it is more than offset by transportation fuel savings arising from load factors. The cost of grinding tops and branches in the forest, for the purpose of the study is $14/$m^3$ green, and has been determined through discussions with industry participants.

Transportation requirements and costs

This section highlights the transportation requirements and costs from the roadside to the mill site in Wawa, Ontario. Any transportation costs associated with the transporation costs associated with moving the tree from the stump to the roadside is included in the harvest cost. Transportation of roundwood from the roadside to the mill is accomplished by truck with each load carrying 40 tonnes which represents approximately 40m^3 of poplar or 48m^3 of spruce. The average cost of transporting roundwood to the millsite is $12/$m^3$, based on a diesel price of $1.30/litre. For each $0.10/litre increase in the fuel price, the cost to transport a cubic metre of fibre will increase by $1.00.

Transportation of tops and branches from roadside to the mill, in ground form, results in a higher cost per tonne due to loading and volume density factors. The average load is approximately 32 tonnes, representing 32m^3 of poplar or 39m^3 of spruce costing $15/$m^3$. Again, the estimated cost of transportation assumes a $1.30/litre cost of diesel fuel.

Accessibility and infrastructure requirements

As part of the Ontario government's commitment to assist the forest industry, the costs of creating a primary road in the forest to access timber are reimbursable to the contractor by the Government. As such, no additional costs are required for road accessibility or infrastructure requirements for primary roads. Road costs related to the construction and maintenance of secondary and tertiary roads has been estimated at $2.00/$m^3$ of fibre supply for capital road construction and $0.65/$m^3$ for road maintenance.

Forest renewal costs

Before 1994, Crown stumpage charges were effectively a royalty system – a percentage of the value of the product. In 1994, the Ministry introduced a more complex stumpage pricing system, designed to meet a number of objectives. Under this system, forest companies in Ontario pay a stumpage fee to the Crown for every cubic metre of timber harvested. A market-based pricing system is used to calculate the stumpage fees that companies (and individuals) pay for harvesting timber from Crown land, to ensure that the province receives a fair return for the resource. In times of strong market prices for forest products, the market-based system triggers higher stumpage fees. When prices are low, the forest industry pays lower fees. The main components of Ontario's Crown stumpage charges are a minimum charge, a forest renewal charge, a forestry futures charge, and a residual value charge.

The minimum charge generates a secure level of revenue to the provincial treasury, over and above renewal costs and regardless of market conditions. This charge is adjusted annually. Minimum charges depend on the species being harvested and the destination of the timber. The minimum charge, also known as the forest inventory resource charge is estimated at $0.59/m3.

The forest renewal charge generates funds necessary to cover the cost of renewing the harvested area. It is determined annually for each tree species group within each management unit.

If the timber sold is from a Sustainable Forest Licence management unit, the revenue is directed to the Forest Renewal Trust Fund. If the timber sale is from a transitional (non-SFL) forest management unit, the revenue is directed to the Special Purpose Account - Forest Renewal. Regardless of whether the funds go to the Trust or the Special Purpose Account, they can be used only for silvicultural expenses. As well, the actual renewal revenue generated by each individual management unit is only to be used for silvicultural expenditures on that same unit. The renewal trust charge is estimated at $0.25/m3 (minimum).

The forestry futures trust charge generates revenue for forest renewal and protection, for activities not covered by the forest renewal charge. The rate is the same for all management units and tree species groups: $0.48 per cubic metre of timber harvested. Revenue is held in the Forestry Futures Trust Fund, which is used to fund:

- Silvicultural expenses in Crown forests, where forest resources have been killed or damaged by fire or natural causes;
- Silvicultural expenses on land subject to a forest resource licence, if the licensee becomes insolvent;
- Intensive stand management and insect and disease protection for forest resources in Crown forests; and
- Such other purposes as may be specified by the Minister.

Martel Forest

The Martel forest is located in the east of the Algoma forest and covers 7,591.5 km^2 of land with 6,929.8 km^2 of productive lands.

Available suitable species

The Martel forest is home to many hardwood, tolerant and intolerant, and softwood species primarily spruce, pine and fur.

Roundwood:

The following table summarizes the total annual (white wood) fibre supply from the Martel Forest for all users:

Description of Fibre	Volume (m^3/yr)[1]	Comments
Assigned (currently being utilized)	695,271	Multiple species - Currently being utilized by beneficiary mills - not available for biofibre
Assigned (not being utilized)	300,029	Poplar & white birch that could be available for biofibre if Weyerhaeuser OSB/GFP Timmins mills close permanently
Unassigned Operable (assume 85%)	55,015	Algoma millworks conditional commitment (low-grade white birch), cedar, larch, low-grade intolerant hardwood
Unassigned Inoperable (assume 15%)	9,709	Inoperable – not available for biofibre

[1] Volumes derived from Tables FMP-23 and FMP-24 from the 2006 Forest Management Plan for the Martel Forest
The fibre that is potentially available on the Martel Forest for the purpose of this study is:

- Assigned poplar & white birch that is currently not being utilized;
- Operable unassigned white birch that was to fill a conditional commitment for Algoma millworks; and
- Operable unassigned tolerant hardwood, larch and cedar.

Tops, Branches and Bark:

Description of Fibre	Volume (m^3/yr)[2]	Comments
Roundwood bark	39,055	Available for biofibre from the available roundwood noted above and not include in the volumes (assumed at 11% of volume and used for hog fuel only)
Tops & Branches (from assigned)	149,295	Available for biofibre (based on OMNR biofibre study estimate that tops & branches are 15% of roundwood volume)
Tops & Branches (from unassigned operable)	8,252	Available for biofibre (based on OMNR biofibre study estimate that tops & branches are 15% of roundwood volume)

[2] Estimates based on OMNR biofibre study which assumes tops & branches are 15% of roundwood volume.

Private forest harvest opportunities

The Martel forest is home to a number of private landowners and harvesters. While the study is focused on the availability of fibre from crown land, there is an opportunity to access additional sources

from the private landowners. In discussions with a number of the private landowners, none have indicated that they have any available fibre and therefore, for the purposes of this study, these potential sources have not been included in the calculation of available fibre.

Aboriginal Harvest Opportunities

Potential opportunities for long-term economic benefits to local Aboriginal communities may be created as a result of the increased utilization of forest resources.

Harvest cost to roadside

As noted in the harvest cost to roadside paragraph of the Algoma forest section, harvest cost to roadside includes all costs associated with the removal of the tree at the stump and skidding out of the forest to a landing area for further processing.

The total harvest cost is $34.87/m3. The cost of each activity or item is broken down as follows:

Activity/Cost Item	Cost ($/m3)
Harvest to road side	$18.25
Slashing	$4.80
Cleanup/Delimbing	$4.80
Sort yard/reload	$2.20
Forest Camps & Commuter Costs	$2.10
Overhead Allocation	$2.72
Total	**$34.87**

We have also assumed that the fibre will be harvested by a third party contractor and not by the pellet mill employees.

Grinding costs

As stated in the Algoma forest section of this report, the cost of grinding tops and branches in the forest, for the purpose of the study is $14/$m^3$ green, and has been determined through discussions with industry participants.

Transportation requirements and costs

The following table notes the cost per m3 of transportation of fibre from the Martel forest to the mill sites in Wawa and Chapleau, respectively:

Fibre source	Wawa site	Chapleau site
Roundwood	$15.50/$m^3$	$10.50/$m^3$
Tops and branches	$18.60/$m^3$	$12.60/$m^3$

The estimated cost of transportation assumes a $1.30/litre cost of diesel fuel. For each $0.10/litre increase in the fuel price, the cost to transport a cubic metre of fibre will increase by $1.00.

Accessibility and infrastructure requirements

Road costs related to the construction and maintenance of secondary and tertiary roads has been estimated at $2.00/$m^3$ of fibre supply for capital road construction and $1.10/$m^3$ for road maintenance.

Synergy opportunities (co-harvest for sawlogs, etc.)

As will any value added forestry operation, there are a number of synergenistic opportunities that may arise. Since the pellet mill's primary raw material is wood fibre, in chip or sawdust form, synergies can

arise from locating near or associating with a producer of lumber or other wood products where the bi-product of their process is chips or sawdust. This could reduce the transporation cost of the materials to the site.

Forest renewal costs

As illustrated previously in the Algoma forest section of the report, the forest renewal costs are threefold:

- A forest inventory resource charge of $0.59/m3;
- A forestry futures trust charges of $0.48/m3; and,
- A renewal trust charge - $0.25/m3 (minimum).

Summary of available annual fibre supply by volume (m3)

The available fibre supply from the Algoma and Martel forest consists of the assigned fibre that is not being utilized, the unassigned and operable fibre and the tops and branches available from these two sources. The following table summarizes the available fibre in cubic metres from the two forests:

	Algoma forest	Martel Forest	Total
Assigned (not being utilized)	68,852	300,029	368,881
Unassigned Operable	27,796	5,501	82,815
Tops & Branches (from assigned)	27,017	149,295	176,312
Tops & Branches (from unassigned operable)	4,169	8,252	12,421
Roundwood bark	10,631	39,055	49,686
Total	138,465	551,650	690,115
Tops & Branches used in the drying process (17.5% of the available fibre)[1]			(120,769)
Total available annual fibre supply (m^3)			569,342

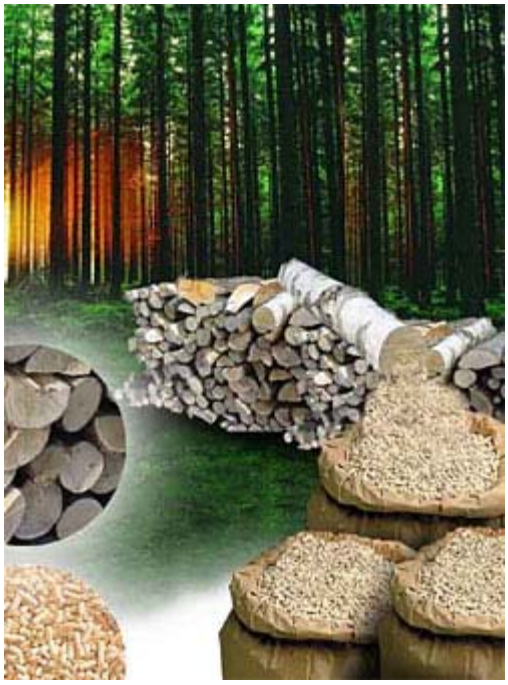
Source: SFL licence holders for the Algoma and Martel forests

[1] As noted in the table above, we have assumed that 17.5% of the fibre available will be used as fuel in the dryer operations. The industry averages between 15 - 20%.

Conversion from m^3 to pellet tonnes

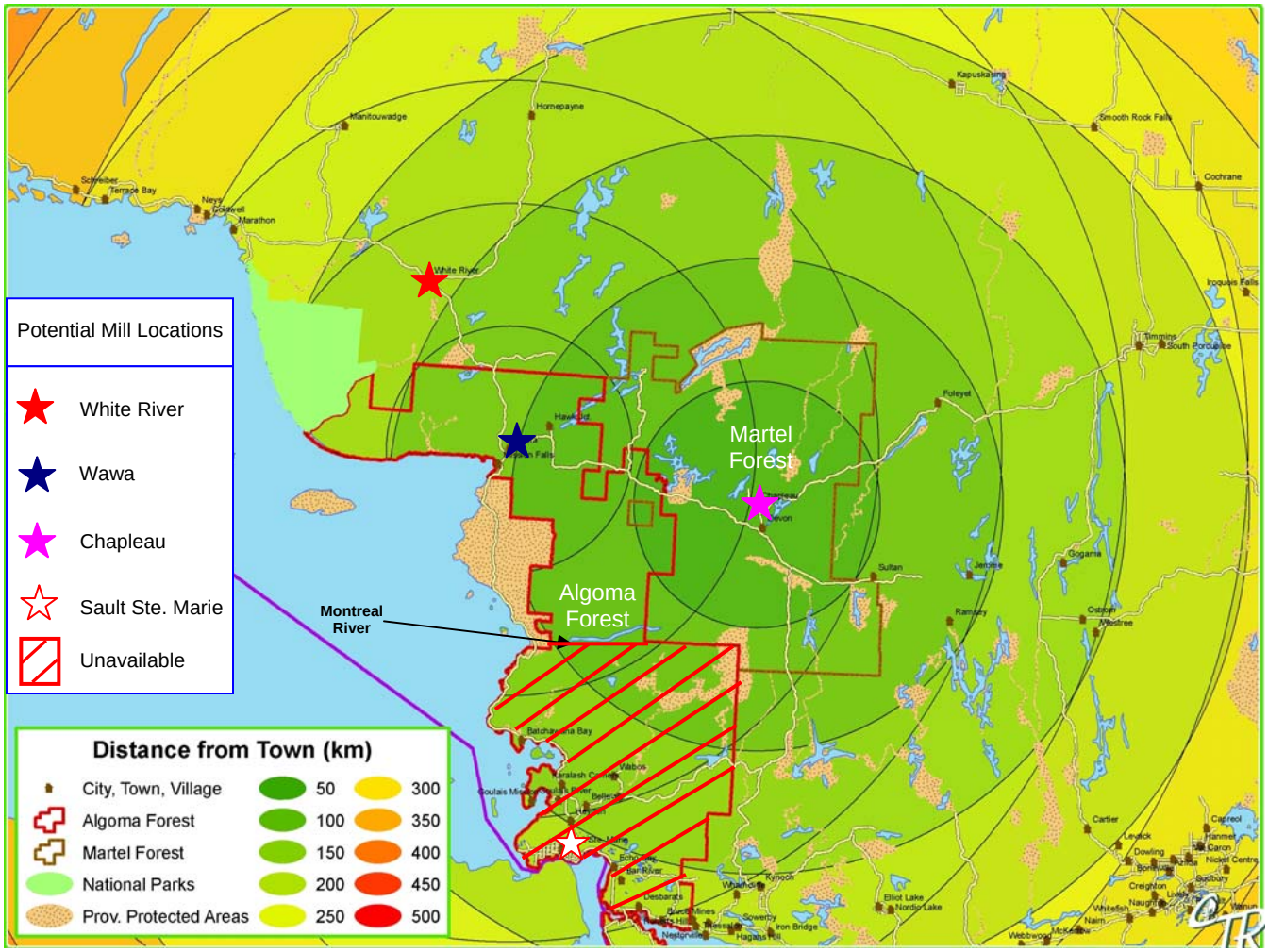
For the purpose of the study, we utilized an average conversion factor of 1.94 m^3 of biofibre to produce 1 oven dried tonne (ODT). The calculation, illustrated below, is based on the forest management unit's weighted average species conversion factors.

Fibre source	All MU Avail Average	Green 2 ODT kp/m3	% biomass ODT kg/m3
All poplar	22.8%	437	99.7
All white birch	15.0%	572	85.8
All tolerant hardwoods	28.2%	640	180.4
All spruce, pine and fir	19.6%	424	82.9
All cedar and other	4.3%	425	18.1
All red/white pine	10.2%	471	48.0
Oven dried tonne of fibre required for 1 m^3 of biofibre			514.9
Conversion factor of 1 ODT to m^3 of biofibre			1.94



Wood Pellet Plant Proposed Locations

This study has considered proposed wood pellet plant locations which are close to the resource contained in the Western Portion of the Great Lakes/St. Lawrence Forest. Northern Ontario communities have shouldered the brunt of the economic downturn in the housing market in the United States and the economic effects of the US dollar decline. Many of the Northern Ontario communities are reliant on the forestry industry and are home to former saw mills and other value added forestry production facilities. This creates a potential opportunity in that skilled labour exists and is available in these communities, especially in the harvest operations.



Chapleau, Ontario

Chapleau is the home to approximately 3,000 residents including the nearby First Nation reserves. It is situated inside the Superior-Martel Forest and its major employer is a Tembec sawmill. It is home to Canada's first wood waste-fired co-generation facility, Chapleau Co-Generation, providing energy to the sawmill as well as the provincial power grid. Chapleau is also the home to the world's largest game preserve, the Chapleau Crown Game Preserve which consists of more than 700,000 hectares of pristine Boreal forest.

Considerations include:

Fibre supply proximity

Chapleau is located in the heart of the Martel Forest within 100 kilometres haul distance of the fibre supply as noted in the above map.

Site accessibility

The Canadian Pacific railway plays a vital role in the community. Chapleau is a major terminal point and re-fueling depot for the trans-continental rail line. It is the home to equipment, rail and signal maintenance crews.

Chapleau is within easy access to three major highways including Highway 101, Highway 129 and Highway 17 north (via Hwy 101) and 17 east (via Hwy 129).

The local airport hosts a major Ministry of Natural Resources air base and provides runways for MNR fire suppression bombers which are 3,000 feet and 5,000 feet long.

There have been two sites identified for the development of a pellet facility, both of which were once sawmill locations.

Existing infrastructure

Rail Access

Both the vacant sawmill sites have access to the Canadian Pacific railway and have rail spurs onsite.

Potential synergies

The location of one of the vacant sawmills is adjacent to a current operating sawmill and therefore may be able to capitalize on the existing infrastructure and the excess chips and sawdust.

Internet

The community has High Speed DSL service. This broadband, fibre optical network, has the ability to host a variety of internet applications.

Wawa, Ontario

Wawa, Ontario is a community of approximately 3,700 people. It is located at the intersection of Highway 17 North (the Trans Canada Highway) and Highway 101. It is nestled between the north eastern shore of Lake Superior and Wawa Lake. Wawa's main industry was the iron ore mine which operated from 1939 until its closing in 1998. Since then, forestry, tourism and other mining operations have become the main industries in the community. Wawa serves as a regional centre for more than 9,000 people living in the Superior East Region. It offers superb retail shopping facilities, new health and recreational services, and is the economic hub of local forest and mining industries.

Considerations include:

Fibre supply proximity

Wawa is located in the heart of the available fibre supply of the northern portion of the Algoma Forest and within a 100 kilometre haul distance as noted in the above map.

Existing infrastructure

Harbour Facility

Michipicoten Harbour is a located on the north eastern shore of Lake Superior. It is a deep water harbour suitable to accommodate lake freighters. It was formerly used to ship iron ore to the steel mill in Sault Ste. Marie. While currently not in use, it has been maintained. No infrastructure currently exists at the site except for the dock itself. It has ample area for storage and for the installation of loading equipment. It is currently owned by a private company. Road access to the Harbour exists and is considered passable but needs some improvement. The road access is owned by the Michipicoten First Nation.

Rail Access

Rail access exists in close proximity to the community. The rail line is owned by the Algoma Central Railway and is part of CN Rail. There is a rail spur access to the former Weyerheauser Strand Board Plant, located on Highway 101 just east of Wawa, which is now mothballed.

Serviced Industrial Land

The Municipality of Wawa has serviced industrial land available for development in an industrial park. The industrial park is located on Highway 17 North in close proximity to the Harbour facility. Services include municipal water, electricity. There is no sanitary or storm sewer available. Natural gas is not available in Wawa, but propane is.

An opportunity may exist to purchase a vacant forestry value added mill located just outside of the Municipality of Wawa. This former mill, located on Hwy 101, has its own rail spur, log yard, building and infrastructure. Information regarding the potential purchase from the owner would need to be undertaken by the proponent and separately evaluated.

Internet

The community has High Speed DSL service. This broadband, fibre optical network, has the ability to host a variety of internet applications.

White River, Ontario

White River, Ontario is the home to approximately 1,400 persons. It is located on the Trans Canada Highway 17 North approximately halfway between Sault Ste. Marie and Thunder Bay, Ontario. Highway 639 begins at the intersection in White River and travels north to Hornepayne and beyond to join Highway 11. White River is also a junction point for the Canadian Pacific Railway, a main local employer. A former sawmill was operational in the community until it was recently shut down.

Considerations include:

Economies of scale

White River's main industry was the forest industry. Many in the community worked directly at the former sawmill or in harvest operations and supporting industries to sawmill and harvesting operations.

Fibre supply proximity

White River is located approximately 50 kms north of the Algoma Forest's northern boundary thereby being somewhat removed from the fibre supply.

Existing infrastructure

White River has available land for development. In addition, the dormant sawmill site may be available complete with log yard, rail access, highway access and buildings. Our understanding is the local municipal government is negotiating with the current owner to acquire this former sawmill site. This site would then be available for lease or purchase from the municipal government.

Internet

The community has High Speed DSL service. This broadband, fibre optical network, has the ability to host a variety of internet applications.

Sault Ste. Marie, Ontario

Sault Ste. Marie is strategically located on the St. Mary's River which joins Lake Superior to Lake Huron and Lake Michigan. It borders the United States, State of Michigan, to the south. Sault Ste. Marie provides a convenient and direct multimodal access to both the domestic and international market place. The community has a population of 75,000. Its current major industries are steel, forestry, transportation and more recently energy. It offers superb retail shopping facilities, new health and recreational services, and is the gateway to Northern Ontario Tourism Industry.

Considerations include:

Fibre supply proximity

Sault Ste. Marie is located in the southern boundary of the Algoma Forest. As such, its proximity to the closest available fibre supply is 100 kilometres away as all fibre located south of the Montreal River is already assigned and currently utilized.

Existing infrastructure

Sault Ste. Marie Deep Water Port

Located on the St. Lawrence Seaway, the Sault Ste. Marie Deep Water Port provides complete vessel cargo services for general and bulk cargos. The community is in the process of further developing this port facility and completion of this project is expected in 2010.

Rail Access

Rail access exists for coast to coast access with Canadian National Railway and Canadian Pacific Railway via Huron Central Railway. Rail spur access exists in a number of locations throughout locations in the community.

Serviced Industrial Land

Sault Ste. Marie has available fully serviced industrial land, complete with rail access and proximity to the deep water port in their Industrial Wood Park. Up to 500 acres of land are available for immediate startup. Other serviced industrial properties are available throughout the City. Access to the Trans Canada Highway 17 is easily available via a new truck route constructed within the City limits.

Internet

Access to all major fibre optic networks and international fibre optic connections currently exist within the City.

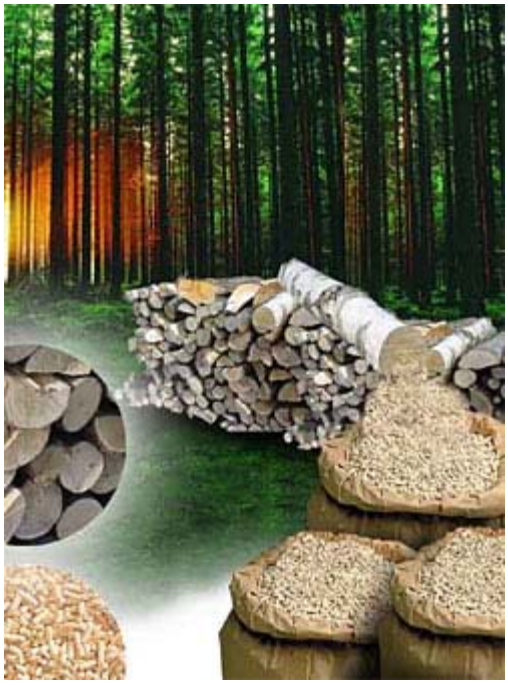
Proposed site selection and output

Upon review of the potential sites highlighted above, discussions with the sustainable forest licence holders, industry players, and the Ministry of Natural Resources, the ideal sites proposed for the purposes of this study are located in the communities of Chapleau and Wawa (former mill site west of Wawa). Consideration has been given to these locations based on proximity to the fibre supply, access to transportation networks, and existing infrastructure.

Given an analyis of the aforementioned fibre supply and the proposed sites selected, the optimum plant output level has been determined as follows:

Proposed mill site	Annual output
Wawa location	100,000 tonnes
Chapleau location	190,000 tonnes

The above mill site sizes require a transfer of excess fibre from the Martel Forest to supplement the Wawa location. This transfer of fibre is a result of the limitation of the study to the available fibre in the Algoma Forest. Wawa is located in close proximity to other forests which may have available fibre that has not been considered in this study. An opportunity to increase the sizes of both mills may exist and is dependent on the Wawa location accessing additional fibre from other Crown or private sources.



Facility Capital Cost

Facility capital costs in the pellet industry can vary by the size of the mill necessary for the output required and the type of raw material used for pellets. For the most part in Canada, the existing mills produce pellets for the home heating industry from sawdust and other forestry residuals and are of smaller scale. Mills are rated on the output of tons of pellets per hour and start at the 2 tons per hour range. This study considers the requirement of a mill to produce, from roundwood, in excess of 15 tons per hour, a high production target. Pellet plant may require multiple pelletizing machines to accomplish the rate of in excess of 15 tons per hour. The pellet plant will also require a grinder to process the roundwood to useable feedstock. This study uses an annual output of 100,000 tonnes in the analysis of capital cost for simplicity. It assumes a mill will be operating for 300 days per year and 24 hours per day, requiring 15 tonnes per hour output.

Technology overview

The production of wood pellets from roundwood stock requires the following infrastructure. The first step upon harvesting the roundwood is grinding. Treelength of roundwood would arrive at the mill site for processing and appropriate handling equipment is required to feed the grinder. This equipment includes the grinder line, log deck, handling and debarking equipment. Tops and branches of the harvested wood would be ground at the harvest location and arrive at the mill in ground form. The ground wood then would be further processed in a hammer mill, which will further breakdown the fibres. The fibres are then dried in a rotary drum dryer mill which is a significant additional capital cost. The dryer mill is required as the roundwood would be received at high moisture content. The dryer will reduce the moisture level to the specification of the pellet mill. A boiler is required to heat the dryer. The boiler should use the tops as fuel in order to reduce the operating costs associated with natural gas or electricity. The dried fibre then is processed by the pellet mill and then proceeds to a cooler to reduce the temperature and ensure the pellet retains its final form. The finished pellet will then be packaged for shipment to the customer in bulk or packaged form. This study assumes the shipment will be in bulk form by water vessel, rail, or truck.

Common and scalable cost summary

The following table summarizes the plant and capital equipment costs associated with the construction of a Greenfield site:

	Chapleau site	Wawa site
Annual capacity	190,000 tonnes	100,000 tonnes
Base capital costs:		
Dryer, pellet mill, cooler, building, site development and soft cost ($125/tonne)	$ 23,750,000	$ 12,500,000
Additional capital costs (included):		
- Onsite grinding (including grinder, log deck and handling Equipment)	4,000,000	4,000,000
- Emmision controls	1,000,000	1,000,000
- Bulk loading and storage equipment	2,000,000	2,000,000
Total capital costs	$ 30,750,000	$ 19,500,000

Infrastructure requirements and cost estimates

The infrastructure requirements and cost estimates are based on a pellet mill producing 100,000 tonnes of pellets annually. The cost estimates have been taken from available industry sources and the Wood Pellet Association of Canada.

Base Capital Costs:

Base capital costs of the key equipment noted above, specifically the dryer, pellet mill, cooler, building, site development and soft cost were determined to be in the range of $100 to $150 per tonne of pellets for a mill of the size indicated. This study assumes the average of the range of $125 per tonne is reasonable for the base capital costs, that is, 100,000 tonnes per year plant would cost $12,500,000.

Additional Capital Costs included in the costing:

Grinding – this pellet production process requires a grinder line and industry estimates determine addition capital costs of $4,000,000 to install a grinder complete with log deck, handling and debarking equipment.

An emission control system including an Electro Static Precipitator is estimated at $1,000,000 and bulk loading and storage equipment costing and estimated at $2,000,000.

Financing costs/return on capital

Financing costs for the pellet mill capital assets have been determined under the following assumptions. It should be noted that actual financing costs will be subject to agreements negotiated between the proponent and the financial institutions and will vary from these estimates in the particular circumstances.

Debt to equity

A 50% debt and 50% equity ratio has been used in the costing as this would be an appropriate financing position for the long term. The debt has been estimated as ten year term debt which is assumed to be available from conventional sources for this type of venture.

Rate of interest

An interest rate of 8% per annum on the term debt has been used. This rate is based on Government of Canada bond average bond yield for a 10 year period of approximately 4.5% plus a premium of 3.5%. Discussions with financial institutions indicated this rate is reasonable and at the high end of the financing cost.

Return on Equity

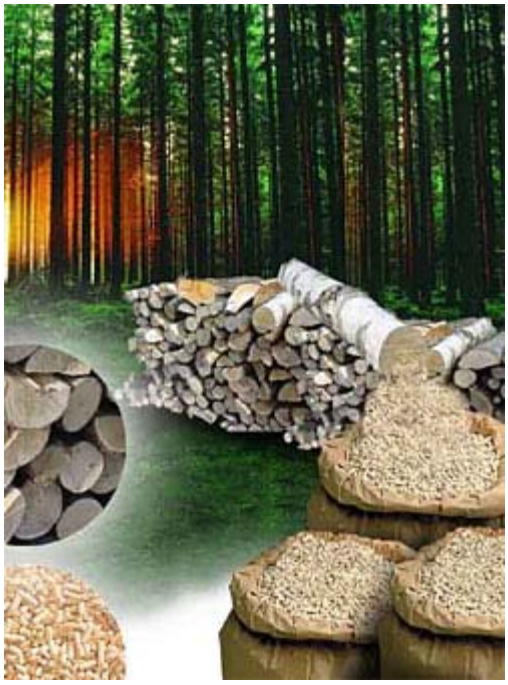
It has been assumed that the equity holder would be entitled to a return on the equity investment of 20% per annum. As the equity holder has the capital at risk, a return of this amount is considered reasonable.

Opportunities for financial assistance

The capital costs and financing structure above do not take into consideration financial assistance opportunities available not only to forest product business but also to Northern Ontario business as a whole. Funding programs are available primarily through organizations such as the Ontario Ministry of Natural Resources, FedNor, and the Northern Ontario Heritage Fund (NOHFC). The following illustrates a number of financial assistance opportunities available through the Ministry of Natural Resources:

- The Ontario Ministry of Natural Resources Forest Sector Prosperity Fund;
  - Provides grants of up to 20% of the projects capital costs up to a maximum of $25,000,000. Therefore, for a $25,000,000 mill, up to $5,000,000 may be available under this program.
- The Ontario Ministry of Natural Resources Loan Guarantee Program;
  - The Ministry may provide loan guarantees ranging from $500,000 to $25,000,000 for up to 5 years.

Further funding may be available through other Federal and Provincial government funding programs through Industry Canada's FedNor program and Provincial governments Northern Ontario Heritage Fund.



Operating and Maintenance Costs

The cost of operations and maintenance for the purpose of this study is divided into four primary categories, labour, including both operating and administration, utilities, including the cost of hog fuels and plant utilities, materials and operational maintenance, including the cost of spare parts and other materials, and repairs and capital maintenance costs. The costs noted below are based on assumptions made by the industry sources and the Canadian Wood Pellet Association and other factors and do not include the costs associated with grinding the roundwood and tops and branches nor any other costs associated with the raw material arriving at the mill location as these costs are include in the cost of fibre.

Labour

The cost of labour to produce one tonne of biofibre wood pellets includes the operational personnel at the pellet mill and an allocation of the company's administration and management. It excludes the labour costs associated with the cost to produce the chips and sawdust to the mill site. For the purpose of this study, the cost of labour, including operational, management and administration staffing is calculated at $10 per tonne for the 190,000 tonne mill in Chapleau and $14 per tonne for the mill in Wawa. This is based on the assumption that the mill requires 7 operational workers per 8 hour shift. Further assumptions include a wage rate for skilled labour workers between $20-$30/hour. Our assumptions have been confirmed through the review of a study issued by the BC Biomass Energy Primer and industry sources.

Utilities

As with any value added forest production process, there are significant utility costs associated with turning the raw materials, chips and sawdust into the finished product. The utility costs associated with the pelletization process include the cost to dry the raw material to the appropriate moisture factor, the utility costs associated with the pelletization machines, property, plant and administration spaces. 70% of the energy consumed in the pelletization process is directly related to the drying process.

In the pelletization process there are two primary resources that are used to dry the raw material received, natural gas/propane and hog fuel, and the costs associated with each vary greatly. The following table highlights the costs associated with the drying process on a per tonne of pellets produced basis:

Fibre source	Hog fuel cost
Wawa site	$ 14.50/ODT
Chapleau site	$ 10.41/ODT

The costs associated with the Wawa site were greater than those at the Chapleau site as it required some of the hog fuel to be transported from the Martel forest as the Algoma forest does not have the supply available. Included in the calculation of hog costs, are the harvest costs to the road and transportation costs to the mill. In comparison, the cost of drying their raw materials using natural gas would be approximately threefold that of the cost of using hog fuel.

In other studies the cost of drying was estimated by Mani et al. (2006) to be about $23 per tonne of pellets, however, this assumed the use of dry wood fuel at a cost of $40 per tonne (delivered).

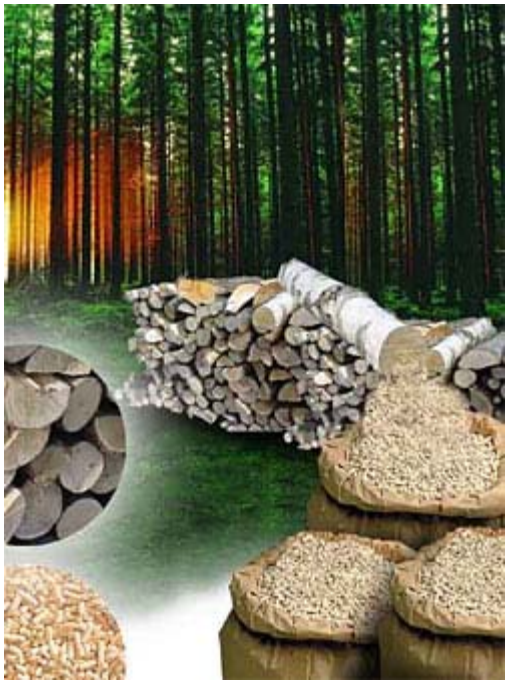
Other utilities include water, sewer and electricity and have been calculated at $10 per tonne of pellets produced.

Materials and operational maintenance

Materials and operational maintenance costs consist of fuel cost for the loaders, packing costs, and tools necessary for production. Based on discussions with the Canadian Wood Pellet Association and industry sources, these costs have been estimated at $5 per tonne of wood pellet produced

Repairs and capital maintenance

Repairs and capital maintenance costs consist of ongoing maintenance requirements including the associated parts and labour. Based on discussions with the Canadian Wood Pellet Association and industry sources, these costs have been estimated at $5 per tonne of wood pellet produced.



Total Cost Summary

The total cost per tonne has been calculated at $185 to $202 per tonne based on the aforementioned estimates and assumptions. The calculation vary by location due to the the cost of fibre, transportation costs to the mill and road construction and maintenance costs. The following table highlights the total costs and cost per tonne for the two proposed site locations.

Total Cost per Tonne

	Chapleau site		Wawa site	
Annual capacity	190,000 tonnes/year		100,000 tonnes/year	
	Total costs	Cost/tonne	Total costs	Cost/tonne
Fibre costs				
Harvest cost	$ 10,821,642	$ 56.34	$ 5,799,385	$ 57.19
Transportation to mill	4,073,895	21.21	2,835,799	27.96
Stumpage	390,321	2.03	205,913	2.03
Roads*	916,662	4.77	440,091	4.34
Forest management	591,395	3.08	311,989	3.08
Total fibre costs per tonne		87.44		94.60
Manufacturing & administration costs				
Grinding (roundwood)	2,235,647	11.64	1,180,403	11.64
Hog fuel **	1,999,807	10.41	1,470,645	14.50
Utilities	1,920,659	10.00	1,014,092	10.00
Labour	1,920,659	10.00	1,419,729	14.00
Handling	480,165	2.50	253,523	2.50
Materials	960,329	5.00	507,046	5.00
Repairs & Maintenance	960,329	5.00	507,046	5.00
Total manufacturing costs per tonne		54.55		62.64
Total production costs per tonne		141.99		157.24
Financing costs				
Interest and principal on debt	2,235,900	11.64	1,418,000	13.98
Return on equity	3,075,000	16.01	1,950,000	19.23
Total financing costs per tonne		27.65		32.61
Total cost per tonne		$ 169.64		$ 190.45

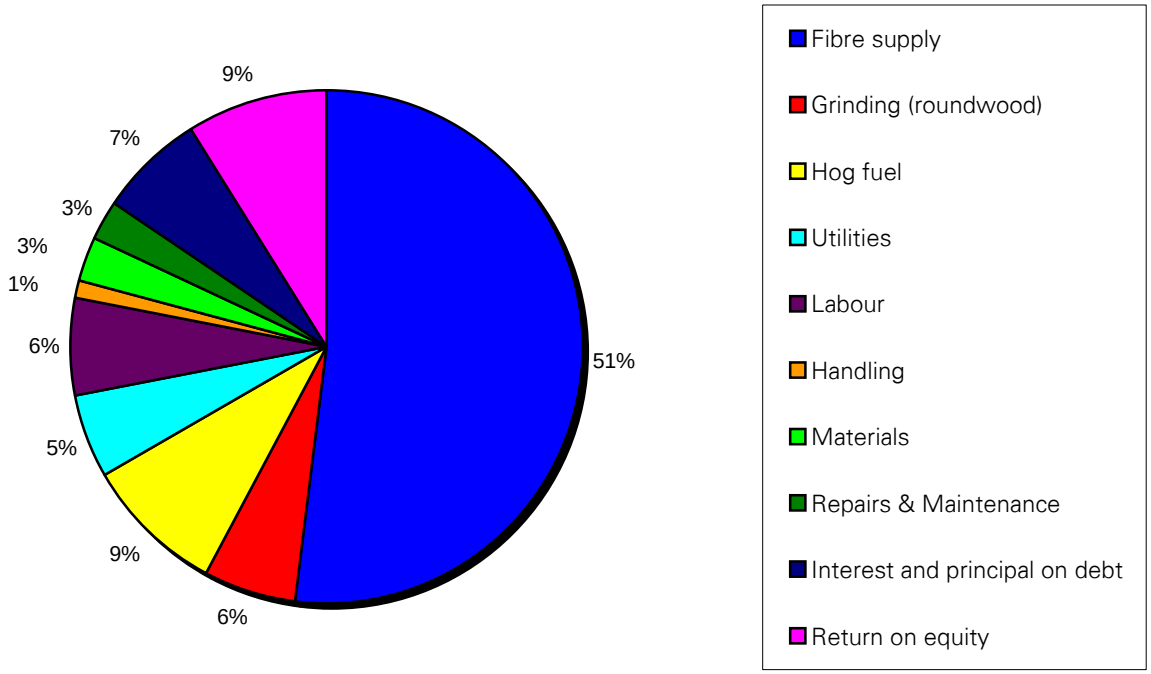
* Road costs are stated at gross and do not reflect the current recoveries under the Ontario Ministry of Natural Resources Road Construction and Maintenance Funding Program.

** Hog fuel costs do not include any recoveries or additional costs associated with ash utilization.

Total cost as a percentage of production

The following diagram illustrates the individual costs associated with producing one tonne of biofibre pellet as a percentage of the total.

Wood Pellet Cost per Tonne (2008)



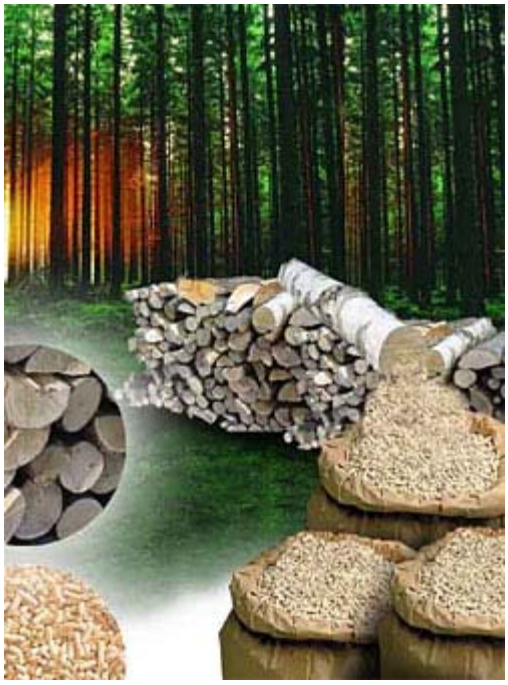
Figures based on an average of the Chapleau and Wawa mills.

Road Costs

The OMNR Road Construction and Maintenance Funding Program currently reimburses SFL companies for eligible road construction and maintenance activities on Crown land allowing companies to recover up to 100% of their costs for Primary Roads and 50% of their costs for Secondary/Branch Roads. It should be noted that the longevity of this program is uncertain.

Since the inception of this program, the Algoma Forest has been reimbursed on approximately 75% of its actual road construction and maintenance costs. Based on this percentage the current savings on the Algoma Forest are $1.50/m3 construction ($2.00/m3 x 75%) and $0.49/m3 maintenance ($0.65/m3 x 75%). The Martel Forest has also been reimbursed on approximately 75% of its actual road construction and maintenance costs which translates into a savings of $1.50/m3 on construction ($2.00/m3 x 75%) and $0.83/m3 on maintenance ($1.10/m3 x 75%).

The affect of these savings on production costs have not been factored in on the table of Total Cost per Tonne on the previous page.



Other Considerations

Overview of recommendations on infrastructure requirements

In addition to the plant and capital equipment outlined in the facilities capital cost chapter of the report, there are a number of optional capital costs that may be applicable including:

Combined Heat and Power

- A 10MW facility costs between $8-10 million;
- Has capacity to burn biofibre (bark, tops and branches) and to produce power for resale to the energy grid;
- May provide the opportunity to sell steam through district heating;

Rail Spur

- Cost of $2 million per kilometre for a single freight line track including all required costs;
- Maybe required if the site location is not adjacent to an existing line or spur;

Bagging equipment

- An assumption has been made that the pellets will be shipped in bulk and will not require bagging;
- If bagging is required, there are a number of options available costing between $150,000 for a semi–automated system to $500,000 for an automated system.

Sensitivity analysis in the Wawa location

Due to the fibre availability from the Algoma forest, the Wawa location's raw material is being supplemented by fibre from the Martel forest. The ability of the Wawa plant to access fibre from private wood sources in the area and fibre from other forests in proximity to Wawa have not been addressed in this study. Dending on the availability of other fibre sources – the Wawa proposed mill size could increase accordingly and the fixed costs would be absorbed by the increase in production. The resulting cost per tonne may decrease.

Challenges and limitations

One of the challenges noted throughout the completion of this study is that there are few pellet mills in Canada that are utilizing roundwood as a raw material as most are using forest product residuals as their fibre source. The harvesting of roundwood is a significant cost challenge that must be overcome.

Value added opportunities

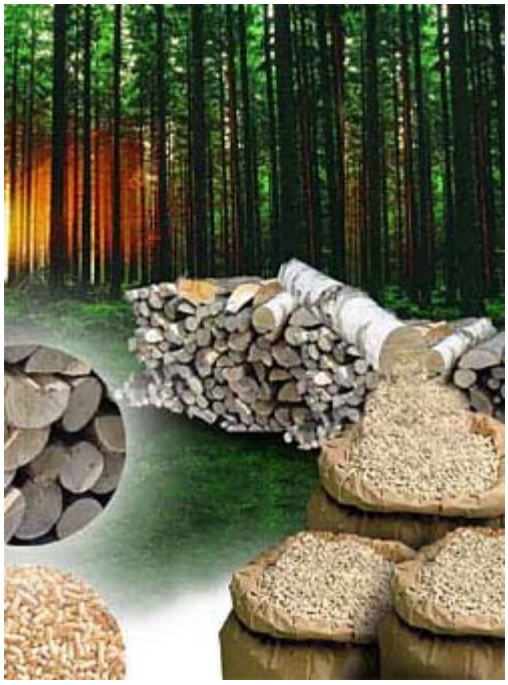
Torrified Wood Pellets

Torrification is a process involving the specialized heating of the wood biomass. Torrification begins at 300 –400 degrees Celsius and liberates water, volatile organic compounds (VOC) and hemicellulose (HC) from the cellulose and lignin in the wood. As part of the process the VOC and HC are combusted to generate the heat required.

Wood Pellets made from torrified wood biomass are value added products which are more durable than normal pellets. Torrified pellets are denser than normal wood pellets and can withstand 1.5 to 2 times the crushing force. In addition, torrified wood pellets do not absorb as much moisture as normal wood pellets. These two factors enhance the shipping benefits of torrified wood pellets.

Studies indicate torrified wood pellets are more suitable for co-firing with coal then normal wood pellets. The heating value of torrified pellets is 11,000 btu/lb. which is similar to coal at 12,000 btu/lb. They generate electricity with a similar energy efficiency to coal (35% fuel to electricity) where as un-torrified pellets have a lower efficiency (23% fuel to electricity).

While the concept of torrification of wood has been around since the 1930's, this process is still in the early commercial application stages. No concrete capital costs are currently available. Many organizations including academic studies are currently further developing the commercial applications. Given the potential benefits, torrification should be considered in any commercial venture.

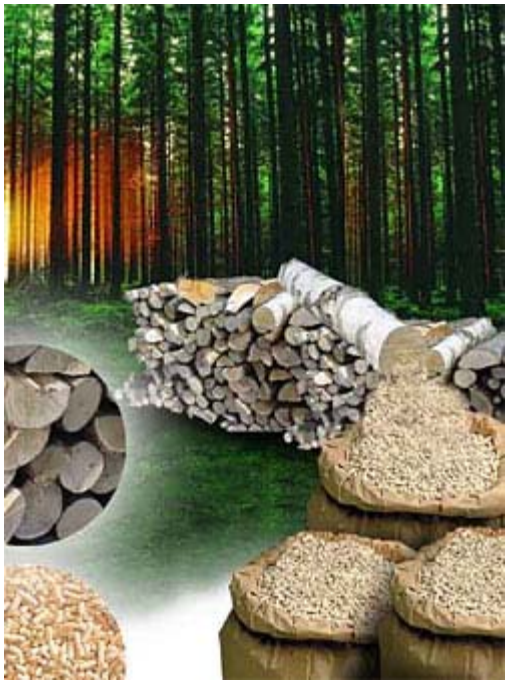


Appendix A – Premium Pellet Specification

All pellets are to be produced to meet the current typical wood pellet specifications (all values, as received):

Criteria	Specification
Gross Calorific Value (HHV)	> 19 MJ/kg
Moisture	< 5%
Ash	< 1%
Bulk Density	> 650 kg/m^3
Particle Size Distribution	100% < 3.0 mm 95% < 2.0 mm 75% < 1.5 mm 50% < 1.0 mm
Pellet Size	< 10 mm diameter < 40 mm length

The ash criteria specification may be increased for commercial use of the pellets. The above criterial is applicable for home heating use. Commercial use of pellets may have a high tolerance for ash content.



Appendix B – Evaluation Process for Biofibre Volume and Value Calculation

The following evaluation process was released by the Ontario Ministry of Natural Resources on May 6, 2008.

How the Process Works

1. **Biofibre** is a forest resource as defined by Section 3 of the Crown Forest Sustainability Act, 1994.

2. All **Biofibre** removed from a Crown forest or from a forest where trees are reserved to the Crown (Crown trees on private lands) must be under the control of a Forest Resource Licence. The harvested volumes of this fibre must be reported to the Crown.

3. Only fibre exceeding the dimensions of undersize material (as defined in the Scaling Manual) will be invoiced.

4. A **Biofibre** product sector has been established for invoicing.

5. A new **"Mixed Wood"** species grouping has been established for invoicing purposes. This species grouping will be used exclusively for processing **Biofibre** material.

6. Both the Stumpage Matrix and Renewal Matrix have been modified to accommodate the new **Biofibre** product sector.

7. Destination Codes must be established for existing and new **Biofibre** processing facilities (cogeneration, bio-fuels, bio-chemicals, etc.).

8. Applicable Crown timber charges payable to the Consolidated Revenue Fund, Forestry Futures Trust and Renewal Trust are as follows:
   - **Consolidated Revenue Fund**
     i. Minimum stumpage \$0.00/m^3;
     ii. Residual value \$0.00/m^3.
   - **Forestry Futures Trust**
     i. Forest Resource Inventory charge of \$0.59/m^3;
     ii. Forestry Futures charges of \$0.48/m^3.
   - **Renewal Trust**
     i. Minimum charge of \$0.25/m^3.

   NOTE: If warranted a renewal rate can be established greater than the current \$0.25/m^3 rate where this minimum rate does not cover the cost of renewal for a specific management unit. Renewal rates are set by Management Unit not by processing facility.

   Total Crown Charges = \$1.07/m^3 plus renewal charges.

   NOTE: The above noted Crown charges will be set annually and applicable for that fiscal year (1st April of one year to 31st March of the following year).

9. If Biofibre is to be harvested from a *Salvage Operation* the Provincial policy/procedure for "Killed or Damage Forest Resources" will be followed.
   - Depending on the extent of Damage and the severity of damage a reduction of 25%, 50%, or 75% to the Consolidated Revenue charge may occur;
   - No Forestry Futures charges will apply;
   - Forest renewal charges will be applied (Minimum charge of $0.25/m^3$ or if warranted a renewal rate can be established greater than the current $0.25/ m^3$);
   - There are no deductions for undersize, defect or cull logs when measuring salvaged timber (as defined in the Scaling Manual).

   Applicable Crown charges for salvage operations are as follows:
   - **Consolidated Revenue Fund**
     i. Minimum stumpage $0.00/m^3$;
     ii. Residual value $0.00/m^3$.
   - **Forestry Futures Trust**
     i. Forest Resource Inventory charge of $0.00/m^3$;
     ii. Forestry Futures charges of $0.00/m^3$.
   - **Renewal Trust**
     i. Minimum charge of $0.25/m^3$.

   NOTE: If warranted a renewal rate can be established greater than the current $0.25/m^3$ rate where this minimum rate does not cover the cost of renewal for a specific management unit.

   Total Crown Charges for *salvage operations* = $0.25/m^3 or a renewal rate greater than the minimum that is set by the District Manager for that Salvage operation.

Harvest Approval Wizard Set-up and Tally Processing

1. All **Biofibre** operations must be authorized under an existing or new Harvest Approval.

2. Processed **Biofibre** may be delivered to a facility site as:
   - Chip or ground wood (scaling method is 71); or,
   - Roundwood (scaling method is 50).

3. In order to facilitate **Biofibre** harvest and capture volumes and values correctly, **species split codes (95) and (96)** were developed and are **strictly for Biofibre** use**.** For example, in one Harvest Approval, mixed softwood may be hauled to a facility using species split code 95. At a later date and from a different area within the same Harvest Approval, a combination of mixed softwood, poplar and white birch may be hauled to the **same** facility. Species split code 96 would then be used.

4. The following species codes and mass/volume ratios will be used for invoicing purposes:
   a. **Mixedwood (Softwood) Species Code: 28 –** (used for a mix or single species for all conifers) utilizing a mass/volume ratio of **784 kgs/cubic metre**;
   b. **Mixedwood (Hardwoods and Softwoods) Species Code: 30 –** (used for a mix of all conifer, graded hardwoods, poplar and white birch) utilizing a mass/volume ratio of **830 kgs/cubic metre**;
   c. **Mixedwood (Graded Hardwoods) Species Code: 31 –** (used for all graded hardwoods species) utilizing a mass/volume ratio of **1029 kgs/cubic metre**;
   d. **Mixedwood (Poplar and White Birch) Species Code: 40 –** (used for poplar and white birch mixed or pure of either species) utilizing a mass/volume ratio of **931 kgs/cubic metre**.

5. There are no deductions for defect **(defect or cull logs)** as per the Scaling Manual (Fuelwood Section). **Undersize deductions** may range from 0% to 100%.

6. **Approval Wizards allow the use of these new species codes** as the individual species making up these new codes have already been approved for harvest on the licence and are already listed in the licence documents. **The individual species are simply grouped or bundled** for processing purposes.

7. The Regional Measurement Unit, in consultation with MNR District staff and the Licensee, will establish species grouping splits and undersize deductions for a specific operation by using:
    - Historic scaling/harvest data;
    - Forest Resource Inventory data for the stand or block; or,
    - An estimate obtained by observation of the area of operation.

Examples of Wizard Data for Biofibre Processing

Simple Operation:

a. Poplar and white birch modified tree length operation where sawlogs and/or veneer have already been extracted from the stem:
    i. For tally processing species split code 95 or 96 must be used;
    ii. Species code 40 (poplar/white birch) is used for this species grouping;
    iii. An undersize deduction of 20% was determined.

TREES would then calculate volume and values in the normal fashion:

- Mass/volume ratio for poplar/white birch (code 40) is 931 kgs/m^3
- Gross mass of load is 37,800 kgs
    i. Gross volume = 37,800 ÷ 931 = 40.602 m^3
    ii. Net volume of load = 40.602 X 80% = 32.482 m^3
    iii. Value:

Minimum and residual value price = 32.482 X $0.00	= $ 0.00
Forest Resource Inventory charges = 32.482 X $0.59	= $ 19.16
Forestry Futures Trust charges = 32.482 X $0.48	= $ 15.59
Renewal Trust charges = 32.482 X $0.25	= $ 8.12
Total Crown stumpage value for the load	**= $ 42.87**

Complex Operation:

b. An operation where spruce/pine/fir and poplar/white birch are being harvested together:
    i. For tally processing, species split code 95 or 96 must be used;
    ii. Two species codes and two species splits will be required – species code 40 for poplar/white birch at 60% with 18% undersize deduction and species code 28 for spruce/pine/fir at 40% with 86% undersize deduction;

TREES would then calculate volume and values in the normal fashion:

- The new mass/volume ratio would be:
    i. Poplar/white birch (code 40) 60% X 931 = 559
    ii. Mixed softwood (code 28) 40% X 764 = 306
    iii. New mass/volume factor = 865 kgs/m^3

- The gross mass for the load is 37,680 kgs
    i. Gross Volume = 37,680 ÷ 865 = 43.561m^3
    ii. Volume of the Po/Bw (code 40) = 43.561 X 60% = 26.137m^3
    iii. Volume of the SPF (code 28) = 43.561 X 40% = 17.424m^3

- Net Volumes:
    i. Po/Bw (code 40) = 26.137 X 82% = 21.432m^3
    ii. SPF (code 28) = 17.424 X 14% = 2.439m^3

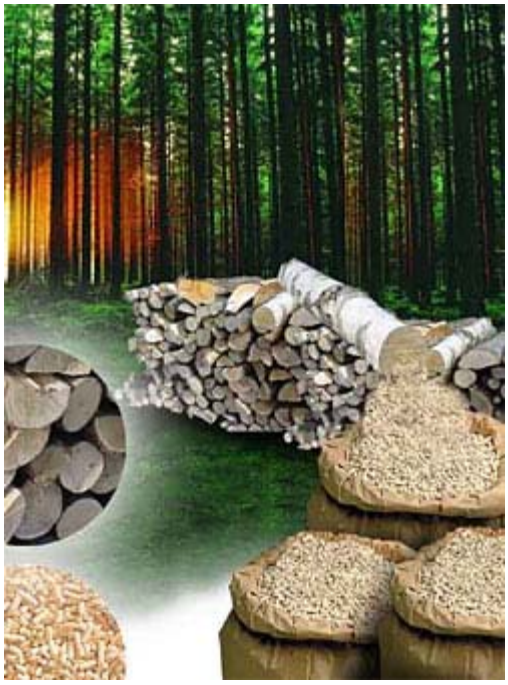
- Values:
  i. Po/Bw (code 40)

Minimum and residual = 21.432 X $0.00	=$ 0.00
Forest Resource Inventory charges = 21.432 X $0.59	=$ 12.64
Forestry Futures Trust charges = 21.432 X $0.48	=$ 10.29
Renewal Trust charges = 21.432 X $0.25	=$ 5.36
TOTAL	=**$ 28.29**

  ii. SPF (code 28)

Minimum and residual = 2.439 X $0.00	=$ 0.00
Forest Resource Inventory charges = 2.439 X $0.59	=$ 1.44
Forestry Futures Trust charges = 2.439 X $0.48	=$ 1.17
Renewal Trust charges = 2.439 X $0.25	=$ 0.61
TOTAL	**=$ 3.22**

  iii. Total Crown stumpage value for the load = $28.29 + $3.22 **= $31.51**



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