

2013

# Porcupine Pellet Plant Business Plan

# PORCUPINE PELLET PLANT | BUSINESS PLAN

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The figures and percentages used throughout this business plan are subject to change depending on the conditions of future markets, supply and demand, dollar value, local, state, and national economic status, and other unforeseeable variables.

All information provided will be true to the best of Renewable Resource Solution's (RRS) knowledge and any oversight or misrepresentation is unintentional. All information is presumed to be the most up-to-date information available as of the official publication date of each individual study. Direct research should be done for the most current information when looking for specific costs/prices in months/years following the publication of this plan.

New technology and innovative practices are constantly being discovered and the most efficient systems and methods today could be outdated in the near future. This study is written to provide the most accurate information possible.

It is known and understood that a large part of the information is either common knowledge or RRS' previously compiled general data. It is also known and understood that with the completion of this business plan, RRS is free to utilize all non-proprietary information in any future studies or reports.

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## EXECUTIVE SUMMARY

### WOOD ENERGY INDUSTRY BACKGROUND

Wood and other biomass combustibles can be burned for heat, used to generate electricity, or be processed into liquid fuels. The USDA's report on the North American Pellet Sector states that modern wood stoves convert 85% to 95% of the energy stored in the wood to heating the intended space.

Using pelletized wood products is more efficient and economical than burning raw wood/biomass. In the US, the trend toward wood pellets as a heating fuel began during the 1970s energy crisis. According to the USDA, the increasing price of fossil fuels, such as propane and fuel oil, has created increased interest in the use of alternative fuels since 2000. In addition, natural disasters, such as Hurricane Katrina, also place great emphasis on the need for alternative energy production methods. Europe is years ahead of the US in developing alternative fuel production and markets, particularly in its wood pellet industry. As demand in Europe for pelletized wood increases, Europe looks to the US and Canada as a pellet source.

Currently, very little forest industry residue is available in the Western Upper Peninsula due to the lack of traditional forest industry companies in this region. Without the start-up of substantial forest industry companies in this area, this situation will not change. This means that the majority of raw material for wood pellets will have to come directly from logging operations. For residential pellets, this would mean using traditional pulpwood material that would have to be debarked to meet the pellet specification requirements. For industrial pellets, whole tree or logging residue chips could be used since these pellets have higher ash standards.

Traditional "pulpwood" markets do not appear to have the potential to rebound its early 2000s state, which will allow raw material typically used in those markets to be readily available for pellet production. The same would be true of whole tree chips since this material would be a combination of pulpwood and traditional logging residue. Processing and transportation of biomass chips is a major cost; therefore, it is critical to identify sources within a

short radius (30-50 miles) if biomass chips are used as a raw material. The future of the wood energy industry is based on tremendous speculation at this point.

Two other pellet plants are in operation in Upper Michigan, one having a very small capacity (10,000 tons) and the other having a large capacity (100,000+ tons). There are five locations with wood pellet plants in Northern Wisconsin with 20,000+ tons of production (Niagara, Hayward, Ladysmith, Peshtigo, and Marathon).

Before construction begins, an air permit needs to be in place. In Michigan, the permitting process is mandated by law to take no more than 180 days; this timeframe does not start until a complete application is submitted.

Plant capacity, pellet production, and pellet consumption are increasing globally. Many nations are adopting carbon emission standards pertaining to energy production facilities whose chief source of power comes from fossil fuels. Co-firing with biomass in coal-burning plants is becoming a more frequent practice to meet emissions regulations. By using biomass in conjunction with fossil fuels, the facility is able to lower the overall carbon emissions and stay within emission regulations. According to the International Energy Association's (IEA) Global Wood Pellet Industry Market and Trade Study, the wood pellet industry has more than doubled between 2006 and 2010.

Grant opportunities such as the USDA Value-Added Grant, Department of Energy Grants, USDA Rural Development Renewable Energy Programs, Michigan Biomass Energy Program, Michigan Department of Energy, and the Michigan Community Development Block Grant Program are very positive for this plant. Many other financing options exist in addition to grants, such as the MEDC Capital Access Program, Small Business Administration Programs, and Charter One's Job Creation Loan Program. In collaboration with grants and loans, the incentives for creating a wood pellet plant in White Pine include the Forest

Products Processing Renaissance Zones, Renewable Energy Renaissance Zones, the Personal Property Tax Relief in Distressed Communities, and the Industrial Property Tax Abatement.

This study focuses on a residential wood pellet plant rather than an industrial wood pellet plant. The current demand for industrial wood pellets is very limited in the Great Lakes region, and without adoption of policies for renewable energy similar to Europe's, it is unlikely to increase substantially. It is recommended that a site be obtained to allow for expansion into other production systems. These systems could be related to animal bedding shavings, wood flour, a co-generation plant, chemical extraction, pallet manufacture, etc. Having multiple systems on one site will more efficiently utilize the available wood resource. Four pellet presses running 24/7 would yield a much higher return than smaller production scenarios if the market exists for the total production volume.

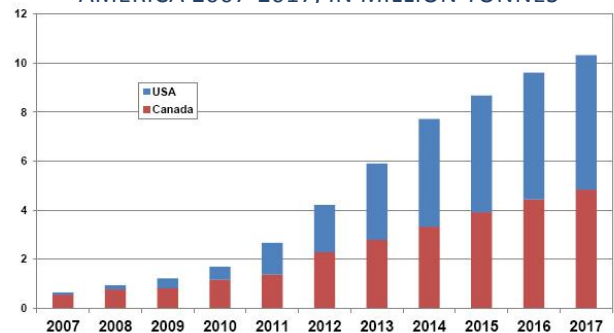
### WORLDWIDE WOOD ENERGY INDUSTRY FORECAST OF GROWTH

US pellet producers are poised to take advantage of the global increase in wood pellet consumption. In 2010, demand in the EU increased by 7% and approximately 1.6 million tons of wood pellets were shipped from the US and Canada to the Netherlands, the UK, and Belgium (IEA Bioenergy, 2011). The European Biomass Association predicts that the EU will increase its biomass use to 100 million tons (up from 13 million) between 2010 and 2020 as they move to achieve their goal of 20% renewable energy by 2020.

As many industrialized nations continue adopting carbon emission standards pertaining to fossil fuel-powered energy production facilities, the industrial/commercial grade fuel pellet market will continue to expand. Some facilities are converting to co-firing systems, which combine biomass with fossil fuel (typically for energy production) to lower the facility's overall carbon emission levels and stay within emissions regulations.

As co-firing with biomass is used more frequently to meet emissions regulations, the demand for commercial/industrial grade wood pellets will also grow. As a result of this increased demand, in the southern US particularly, wood pellet mills are being built to utilize tree resources directly from the forest versus the traditional sawmill residue. These are subsequently some of the largest pellet mills in the US and the world. Cottdale, Florida's Green Circle Bio Energy pellet plant, for example, boasts a 560,000 ton/year capacity (IEA Bioenergy, 2011). The target market for their finished product is primarily for export to the EU, namely the power generating industry for co-firing in coal-based power plants.

FORECAST OF WOOD PELLET EXPORTS FROM NORTH AMERICA 2007-2017, IN MILLION TONNES<sup>1</sup>



### ADVANTAGES OF WOOD ENERGY AS A GREEN BIOMASS FUEL

#### WOOD - GENERAL

Wood is produced from trees, which are a locally-grown renewable resource processed using local labor, in contrast with fossil fuels, which are not renewable and often come from foreign sources. Wood in the Western Upper Peninsula is abundant, with growth exceeding harvest by more than a 3 to 1 ratio (Appendix I). Tree species that have no other, or limited, markets can always be used for wood energy. Energy markets provide a great solution for areas in need of managing low value species.

Forest products are considered "renewable" when sustainably managed. Most states (including Michigan and Wisconsin) have adopted Woody Biomass Harvesting Guidelines that provide sustainable harvesting guidelines for biomass extraction. Prices for wood have been much more

stable than prices for fossil fuels in the past 30 years. Cost comparisons can be found in Appendix I.

### WOOD PELLETS

There are a number of advantages of using wood pellets as a source of wood fuel, including:

- Uniform size and shape (1½" long x 1/4"-5/16" diameter) and storage (bagged or on-site silo)
- Uniform moisture content (4-6%)
- Relatively simple heating technology (fewer operation and maintenance requirements)
- High energy content by weight (roughly 7,750 BTU per pound at 6% moisture content)
  - For heating, one ton of wood pellets equals (BERC, 2007):
    - 120 gallons of heating oil
    - 170 gallons of propane
    - 16,000 ft<sup>3</sup> of natural gas
    - 4,775 kilowatt hours (kWh) of electricity
- Cost effective alternative heat energy source
  - Paying \$200/ton for pellets is the same as paying (BERC, 2007):
    - \$1.67 per gallon for heating oil
    - \$1.18 per gallon for propane
    - \$12.50 per 1,000 ft<sup>3</sup> for natural gas
    - \$0.04 per kWh for electricity

### FINANCIAL OVERVIEW

Most costs can be determined fairly accurately, with raw material, labor, and electricity being the main costs. If residential pellets are made, it will need to be decided if a mix of species will be purchased or if only a few specific species will be utilized. Specific species demand may result in increased costs of raw material. Utilizing many species may increase production costs because processing may need to be adapted to the specific characteristics of each species or mix of species.

Developing a high quality residential pellet will be essential to being a successful operation. A softwood pellet or a mixed (softwood/hardwood combination) residential pellet is currently in high demand, but the ability to adapt to changing demands and being able to produce other products should always be an option. These other products may include:

- Hardwood residential pellets,
- Commercial/industrial pellets,
- BBQ pellets, and
- Animal bedding pellets.



## PRODUCTS AND SERVICES

### WOOD PELLET DEFINITION/DESCRIPTION

The USDA defines the pelletization of wood as a process in which “raw wood is compacted into a homogeneous product with higher energy density and lower moisture content and made into uniformly sized cylindrical shapes, facilitating transportation, handling, and usage”.

### WOOD PELLET PRODUCTION

Optimum size in the Lake States (MI, MN, and WI) for a wood pellet plant is a four-press, 24/7, 100,000 ton per year plant, if adequate markets exist for the product. If demand is not adequate, an oversized plant can be built with the hope of demand increasing to match plant capacity in the near future. Alternatively, a plant can be built with the capacity to meet current demand at a lower profit level, with the expectation of future expansion as demand increases.

A 100,000-ton, 24/7 pellet operation is typically optimum for procuring raw material at a fairly consistent price within a reasonable radius. Expansion beyond this size could lead to an increase in raw material prices. However, there is the potential that even the raw material required for a 100,000-ton plant could drive prices up, contingent upon other circumstances, such as competition from new companies or an increase in raw material use from existing companies.

A production level of 100,000 tons is considered a goal for profitability because the costs of increasing production are typically not proportionate to the increased revenue up to that level of production.

### POTENTIAL PRODUCTS

The following reviews the potential products that could be produced at the Porcupine Pellet Plant (PPP) facility, as well as potential byproducts and vertical integration opportunities. A list of raw material options can be found in Appendix II.

### WOOD PELLETS

#### RESIDENTIAL PELLETS DEFINITION

**Premium** | In accordance with the Pellet Fuels Institute (PFI), the “Premium Grade” wood pellet standard specifies that premium pellets will have inorganic ash content that shall be less than 1% and moisture content less than 8%. See Appendix III for a table of PFI’s pellet regulations. The standard further specifies that the pellet bulk density shall not be less than 40 lbs/cubic foot and the pellet fines shall not be more than 0.5% by weight. Fines are defined as particles that will pass through a 3mm (1/8”) mesh screen. The pellets have a cylindrical form (approx. 1½” long x 1/4” diameter).

**Standard** | The “Standard Grade” wood pellet includes the same criteria as “Premium Grade” regarding dimensions, but has a less stringent inorganic ash specification of less than 3% and a less stringent fines percentage of less than 1% per weight. The moisture content must be less than 10% and a bulk density of no less than 38 lbs/cubic foot.

#### COMMERCIAL/INDUSTRIAL PELLETS DEFINITION

The “Utility Grade” (a.k.a. Commercial or Industrial Grade) wood pellet includes the same criteria as “Standard Grade” described above regarding bulk density, percentage of fines, and dimensions, but has a much less stringent inorganic ash specification than any wood pellet classified by PFI: more than 3%, but less than 6%. The moisture content must be less than 10%.

## WOOD PELLET ANIMAL BEDDING

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Using wood pellets for animal bedding has become increasingly popular among stable and farm owners. The low moisture content of wood pellets allows for the bedding to be highly absorbent, up to four times their own weight. Additionally, the intensive production process of wood pellets removes many of the natural oils and eliminates the mold, bacteria, and aromatic hydrocarbons found in unprocessed wood bedding materials. Because wood pellets are screened to reduce fines, very little dust is created by the product. Disposal volume, in any given time period, compared to traditional bedding products, can be reduced by up to 50%. In addition, a mix of wood pellets and manure can be used as compost and fertilizer.

This could be a substantial market, with the opportunity to have a significant portion of production go to this market if sustainable contracts could be secured. To date, aspen and pine are the preferred species for animal bedding. It is suggested that the plant design its capability to utilize both the heating wood pellet production along with animal bedding wood pellets.

These markets, which would be year-round, can balance out the typically low demand periods in the summer months for heating pellets. The necessary species for bedding products are prevalent within the PPP procurement area.

## SPECIALTY WOOD PELLETS

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### BARBEQUE/SMOKER PELLETS

Similar to residential heating, pellet grills are becoming increasingly popular for barbequing. Wood pellets in a variety of “flavors,” such as hickory, mesquite, apple, cherry, sugar maple, and oak, provide the energy source and infuse the food with flavor. According to an article published in the Forest Business Network<sup>1</sup> in December 2012, the use of flavor-infused wood pellets for grilling is one of the most popular cooking trends in the country. Pellet grills are fueled by wood pellets loaded into a hopper affixed to the grill. This hopper auto-feeds the grill as needed through the connected thermostat, allowing the grill to maintain a specific internal temperature. According to the *Hearth, Patio, and Barbeque Association*, some pellet grills are now available in a dual-fuel unit that can switch over from pellet heat to gas when higher temperatures are needed. An attribute unique to a pellet grill is the ability to also use the grill to smoke meats.

## OTHER PRODUCTS

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### WOOD FLOUR

As with pellets, wood flour has typically been produced from wood residue created from various wood manufacturing processes. As demand increases, the potential for creating wood flour from roundwood becomes more viable. Wood flour is pulverized and screened dry (8% - 10% moisture content), the finest grinds look like wheat flour. Most of the industry demands a product that is light in color and weight, highly absorptive, and resin-free. Having no bark and dirt is a requirement for this product (light colored wood species, such as white pine are preferred). The following products use wood flour:

- Composite decking, siding and railing
- Automotive components
- Solidification
- Fillers for feed and plastic applications

### WOOD SHAVINGS

Some of the raw material used for wood pellets could also be used for wood shavings. It would also be a good fit with a wood boiler operation since waste from the shavings operation could be used for fuel. Wood shavings are used as bedding material for horses, sheep, and other farm animals.

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<sup>1</sup> “Adirondack manufacturer diversifies with apple-infused grilling pellets”, Colin Miller. Forest Business Network. December 2012. [www.forestbusinessnetwork.com/24206/adirondack-manufacturer-diversifies-with-apple-infused-grilling-pellets/](http://www.forestbusinessnetwork.com/24206/adirondack-manufacturer-diversifies-with-apple-infused-grilling-pellets/)

### **COMBINED HEAT AND POWER (CHP)**

A biomass energy plant could be an excellent fit with a wood pellet production facility; however, there are a number of factors that this co-dependent relationship may be contingent upon:

- The production cost of electricity versus the price to purchase it from an outside source.
- The internal use of the thermal energy byproduct created from the biomass plant in other on-site production processes including drying the wood chips for pelletizing.
- The potential of residue created from the wood pellet or other on-site operations being used to fuel the biomass plant.
- A premium for “green” energy, the company may be eligible for a Renewable Energy Credit (REC) from the state/federal government.

CHP is definitely an option since electricity is typically the second highest cost of pellet production after raw material costs. A CHP plant could provide electricity for operating the plant and heat for drying the raw material.

### **PALLET MANUFACTURING**

If a residential pellet plant is built, a major spin-off could be the manufacture of pallets. Typically, one ton of pellets is put on one pallet, so if 30,000, 60,000, or 100,000 tons of residential bagged pellets are produced, the same number of pallets would be needed. This could be done in one of three ways:

1. An on-site sawmill cuts logs into lumber and then dries and manufactures the lumber into pallet parts.
2. Rough lumber is purchased and manufactured into pallet parts.
3. Pallet parts are purchased.

With any of these three options, a pallet manufacturing process would be the final step. If either of the first two options is taken, a residue that could be used for raw material to make pellets or fuel for the drying process would be produced.

### **RECOMMENDED PRODUCT MARKETS**

For any wood pellet plant in the interior US at this time, it is imperative to produce a consistent, high-quality premium pellet. Producing a low ash softwood (pine/spruce) pellet or a pellet in combination with a hardwood species, such as aspen, will be essential to capturing a significant share of the premium residential pellet market.

Industrial/commercial pellets should always be an option, especially if export prices to Europe and Asia make exporting profitable. There is also the potential to build a local/regional market for commercial pellets, such as what exists in northern Minnesota where a fish hatchery, casino, and school currently utilize wood pellets. There is also the possibility of the poultry industry utilizing pellet boilers due to several advantages over gas heat. With Minnesota being the top poultry-producing state in the country and currently not having any operating pellet plants, there is the potential to provide product by rail from the White Pine location.

Animal bedding is a market that can provide year-round demand and help offset the peaks and valleys of heating pellet demand. This market is driven by customer preference. Some customers prefer pine, while others prefer aspen. Identifying a specific product for a specific market is critical. There can also be size preferences in the bedding/litter market with 11/64” pellets being a preference in some of these markets.

Barbeque pellets is another good diversification product with a peak season opposite of the heating season, but it is a rather limited, though high-end, market. Utilizing local species, such as cherry, oak, and sugar maple, which are known for their “smokey” flavors, could help establish a foothold in this market.

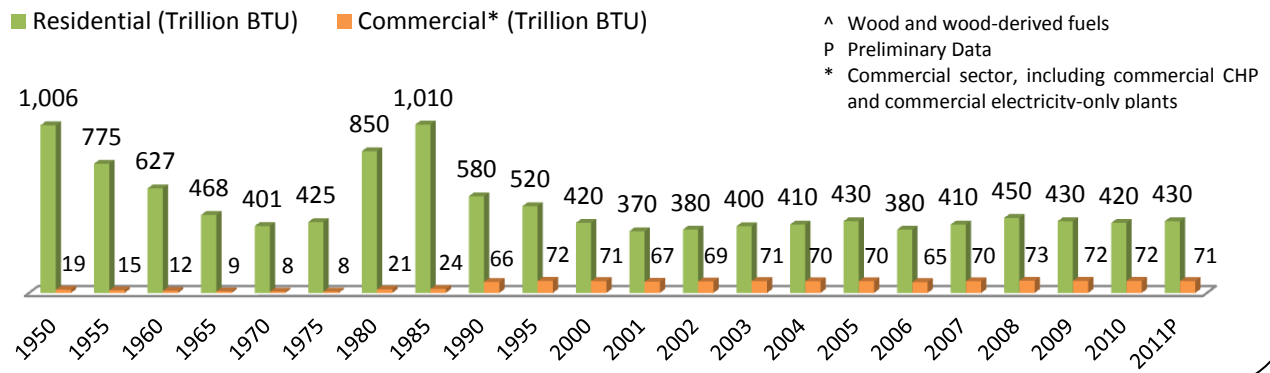
The economics of producing pallets on site should be studied to determine the level of bagged residential pellet production that it would make sense to produce pallets.

# MARKETS AND MARKETING

## DEMAND OVERVIEW FOR CONVERTED BIOMASS PRODUCTS

### CURRENT AND FUTURE DEMAND

US RENEWABLE ENERGY (WOOD<sup>^</sup>) CONSUMPTION: CONSUMED BY RESIDENTIAL AND COMMERCIAL SECTORS<sup>2</sup>



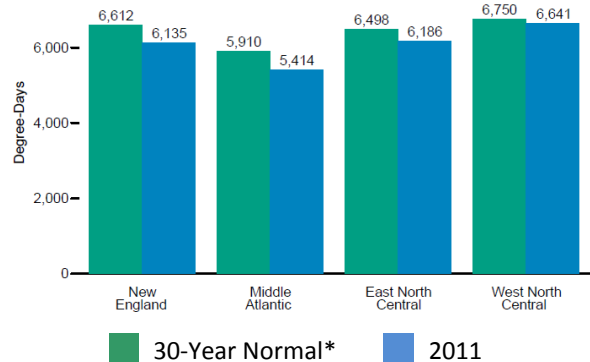
### RESIDENTIAL USE (“PREMIUM” AND “STANDARD” GRADE)

#### REGIONAL AND NATIONAL MARKET

After Europe, North America has the largest pellet production capacity, which grew from 1.1 million tons in 2003 to nearly 7 million in 2011<sup>3</sup>. The 2011 total production capacity in the US was 5.481 million tons and it is estimated that approximately 80% of pellets are consumed domestically for residential heating.

Domestically, winter severity and the number of wood pellet stoves in operation will determine how much available market will exist. Residential stove and boiler markets are expected to continue growing along with advances in clean technology, awareness, and consumer desire for alternatives and cost savings. According to the Pellet Fuels Institute, just over 1 million US households used pellet fuel for heat in 2010 (up from 2009 Consumer Report estimates of 800,000).

HEATING DEGREE-DAYS<sup>^</sup> BY CENSUS DIVISION, 2011<sup>1</sup>



<sup>^</sup> A measure of how cold a location is over time relative to a base temperature, usually specified as 65°F. Used in energy analysis as an indicator of space heating energy requirements or use.

\*Based on calculations 1971-2000

Domestically, pellets compete best against fuel oil, propane, and electricity, with natural gas prices being very similar to pellet prices in the last year. Three tons of pellet fuel will last the average homeowner one heating season. With an average price of \$250/ton, the average homeowner can heat their home for around \$750 per season, at an estimated cost of \$19.05 per million BTU. North America’s Pellet Sector (2009) also states that in mid-Northern climate zones, pellet use in individual homes, per heating season, may rise to four tons of pellets and up to seven tons in the coldest regions.

According to Rob Davis of Forest Energy Systems and former president of the Pellet Fuels Institute (PFI), the

<sup>2</sup> U.S. Energy Information Administration / Annual Energy Review 2011. [www.eia.gov/totalenergy/data/annual/pdf/aer.pdf](http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf)

<sup>3</sup> Analysis of Global Wood Pellets Market. Amisy Machinery. [www.pellets-mill.com/htm/PelletsNews-cn/wood-pellets-global-market166.html](http://www.pellets-mill.com/htm/PelletsNews-cn/wood-pellets-global-market166.html)

current U.S. demand for residential pellets is about 2 million tons a year, which equates to a ratio of about 60 percent of production capacity being consumed domestically and the remaining 40 percent being exported (U.S. Endowment for Forestry, 2011). The Northern Midwest and Northeast have some of the highest demand for wood pellets due to winter severity and current residential home heating methods. A list of regional housing information can be found in Appendix IV.

**COMMERCIAL/INDUSTRIAL USE (“UTILITY” GRADE)**

**REGIONAL AND NATIONAL MARKET**

Schools are a good potential market for utility grade wood pellet heating because they typically have access to long-term (10-20 year), low-interest financing.

Another potential market is outdoor pellet burners. With local zoning ordinances and the EPA potentially regulating outdoor wood burners, many manufacturers are developing outdoor pellet stoves. Information regarding numbers of regional businesses can be found in Appendix IV.

With the current tightening of emissions and state-based emphasis on renewable energy production, there is a potential market to be realized with conversion of coal electric plants to a co-firing system (blend of coal and utility grade wood pellets).

**MICHIGAN COAL-FIRED BOILERS IN PROCUREMENT AREA**

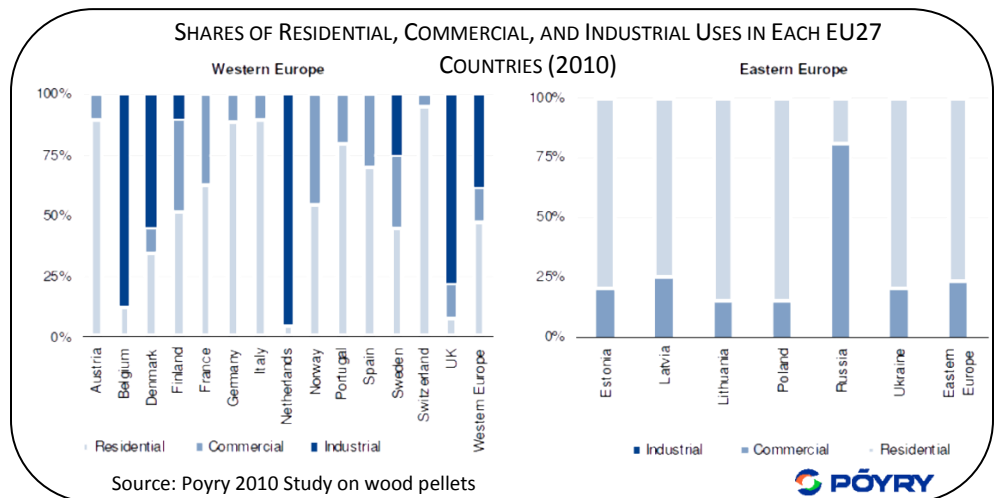
City	County	Location Name	Boiler Use	Fuel Type
Lake Linden	Houghton	Houghton Co. Historical Society	Antique	Coal/Wood
Marquette	Marquette	Board of Light and Power	Power	Coal
Marquette	Marquette	Presque Isle Power Plant	Power	Coal
Marquette	Marquette	UP Generating Co.	Power	Coal*
Pelkie	Baraga	Pelkie Elementary School	Steam Heat	Coal
White Pine	Ontonagon	WPCR	Power	Coal*

\*Pulverized coal

**CURRENT AND PROJECTED EXPORT DEMAND ASSESSMENT**

**PRESENT DEMAND**

According to the *North American Wood Fiber Review (3Q/2011)*, though the US did not start exporting pellets until 2008 (85,000 tons shipped to the Netherlands), US export levels have expanded tremendously, reaching almost 600,000 tons in 2010. With almost 12 million tons of wood pellets consumed in Continental Europe in 2010 (about 20 percent higher than the previous year), demand in European countries such as Sweden, the Netherlands, Belgium, Italy, Denmark, and the UK continues to outpace domestic production. This imbalance in supply and demand has resulted in increased imports from neighboring countries and also from North America, with almost 50 percent of all wood pellets shipped in 2010 via Atlantic trade from North America being destined for the Netherlands and more than one-third to ports in the UK.



### FUTURE DEMAND

Total shipments of wood pellets from the US and Canada to Europe has almost doubled in just two years. In fact, Denham Capital has projected that by 2015, the worldwide pellet market potential is 142 million tons at a value of \$2.8 billion. Projections for demand in the European Union (E.U.) range from 305 million tons to 500 million tons by 2020 (U.S. Endowment for Forestry, 2011).

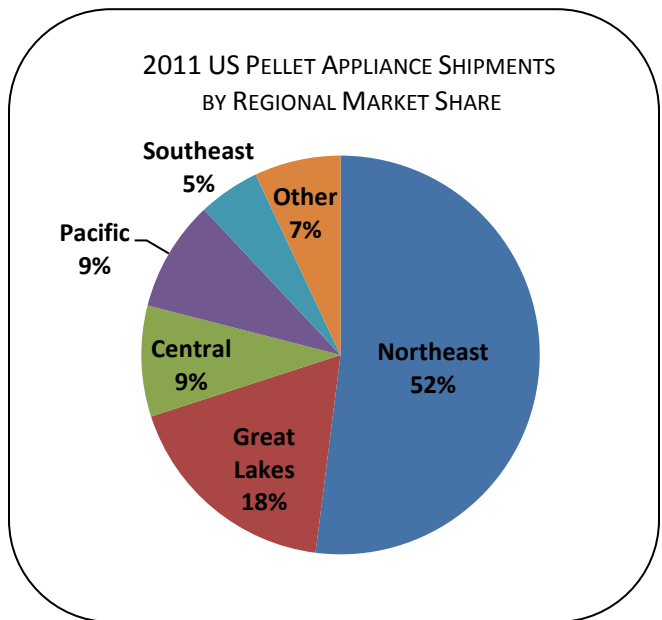
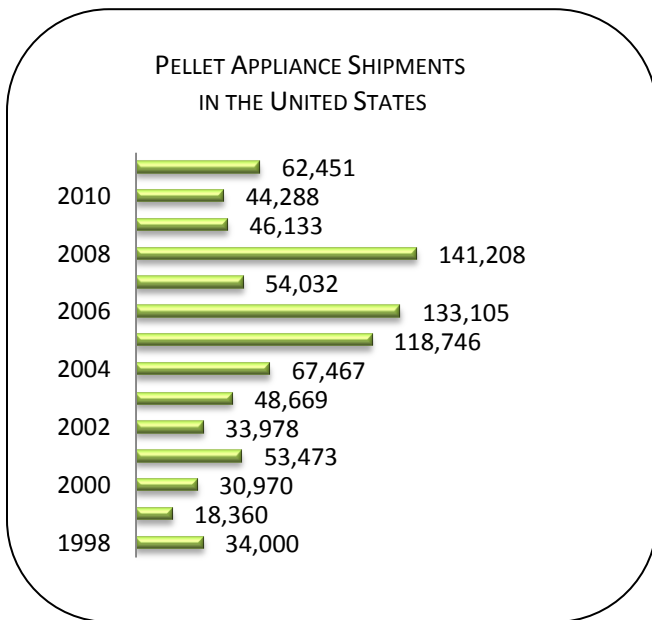
This projection is further supported by an article by Chris Nelder, “The Missing Link to a \$7 Billion Market” published on July 25, 2012

“[...] According to Jonathan Rager of Georgia-based Poyry Management Consulting, a 50 Mt [million ton] gap will open between global supply and demand for pellets by 2020. Western European demand will triple, from 11 Mt per year in 2010 to 35 Mt per year by 2020. For perspective, North American wood pellet production capacity was just 4.2 Mt in 2008 according to the U.S. Forest Service. North American pellet exports were just over 2 Mt in 2011, of which over half came from the southern US.

[...] The European wood pellet market alone will be roughly \$7 billion a year by 2020. The U.S. could supply a big share of that – perhaps as much as \$1 billion a year worth of exports. Globally, the opportunity is even greater, with China, Japan, and other Asian countries planning to increase their demand for pellets.”

### WOOD PELLET STOVES

According to the *National Trade Association Hearth, Patio, and Barbeque*, annual sales of wood pellet stoves in the US have increased by nearly 300 percent in the past 10 years. A 2010 study done by the PFI shows that approximately 1.6 million households had pellet stoves that year<sup>4</sup>. Between 2010 and 2011, pellet appliance shipments increased by 41%, from 44,288 to 62,451<sup>5</sup>.



<sup>4</sup> Pellet Fuels Institute Membership Meeting [pelletheat.org/wp-content/uploads/2010/01/Don-Johnson-PFI-luncheon-presentation.pdf](http://pelletheat.org/wp-content/uploads/2010/01/Don-Johnson-PFI-luncheon-presentation.pdf)

<sup>5</sup> Pellet Fuels Institute Membership Meeting. Wednesday, February 29, 2012. Don Johnson, HPBA Director of Market Research. [pelletheat.org/wp-content/uploads/2010/01/Don-Johnson-PFI-luncheon-presentation.pdf](http://pelletheat.org/wp-content/uploads/2010/01/Don-Johnson-PFI-luncheon-presentation.pdf)

### RESIDENTIAL WOOD PELLET STOVE MARKET

The wood pellet market for residential heating will continue to grow if the cost of fossil fuels continues to rise and technology costs decrease. It is relatively easy for homeowners to purchase and install a new pellet stove since they have relatively low capital costs and installation is simple with direct venting through the nearest wall. Like any market-driven product, demand for this product will be largely driven by economics and payback period. Work done by the Biomass Energy Resource Center (BERC)<sup>6</sup> has shown that homeowners were most likely to install a wood pellet heating system if the payback period was within three years versus five years, and least likely to install if the payback was five to seven years. For a three-year payback period for the typical home installation, average oil prices would need to be \$3.00+ per gallon.

### INDUSTRIAL/COMMERCIAL WOOD PELLET STOVE MARKET

Use of non-residential pellet boilers in the US has been very limited. The main industrial use of pellets has been mixing them with coal to reduce emissions. This practice has been mainly experimental to date. There have been localized efforts in certain regions to utilize wood pellet boilers for public facilities such as schools and fish hatcheries and for private facilities such as restaurants, grocery stores, and greenhouses.

There is currently some speculation about a wholesale change in the poultry industry to pellet/wood heat for a variety of reasons including decreased mortality rates and an overall healthier environment from wood heat.

### WOOD PELLET BOILERS FOR COMMERCIAL USE

Continuous refinement of smaller (500,000 BTU) commercial boilers to make them as efficient and economically affordable as possible is essential to increasing commercial pellet use in the US. Currently Wood Master of Red Lake Falls, MN, and Even Temp of Waco, NE are making serious efforts to sell their products. Concentrated marketing efforts will help grow this industry, along with assisting potential users to access grant funds to reduce capital costs. Initial capital commercial pellet boilers costs are one of the biggest hurdles to overcome.

## MARKET AND ECONOMY OVERVIEW

### CURRENT AND PROJECTED DEMAND | CURRENT RAW MATERIAL/FEEDSTOCK PRICE STRUCTURE

TYPE	PRICE/TON (DELIVERED TO PLANT)
ROUNDWOOD (MOST SPECIES) <sup>A</sup>	\$30-40
BIOMASS CHIPS <sup>B</sup>	\$25-40
RESIDUE FROM FOREST INDUSTRY (SAWDUST, SHAVINGS, ETC.) <sup>C</sup>	\$10-60

<sup>A</sup> Roundwood would come from area loggers as an alternative to traditional pulpwood markets. This roundwood could be debarked and chipped at the plant for premium pellet raw material.

<sup>B</sup> Biomass chips are produced by area loggers, tree services, and municipalities. These chips would be used to produce industrial pellets instead of premium pellets due to ash content.

<sup>C</sup> Appendix V lists all of the potential wood residue producers within a 50-mile radius of the plant site. The residue from these producers would be used to produce premium pellets.

<sup>6</sup> Feasibility Study of Pellet Manufacturing in Chittenden County, Vermont. August 2011. Biomass Energy Resource Center. [www.sustainableheatingvt.org/files/docs/VSHreport-FINAL\\_hi-res%20for%20print.pdf](http://www.sustainableheatingvt.org/files/docs/VSHreport-FINAL_hi-res%20for%20print.pdf)



## COMPETITION OVERVIEW

### REGIONAL COMPETITION

Pellet production has increased as demand for wood pellets has increased. Production of a quality wood pellet with a marketing campaign to promote wood pellet heat will help create a balance between demand and supply of wood pellets. Additionally, wood pellet heating will be more attractive with innovations in pellet heating systems and bulk storage and as prices for fossil fuels increase.

Currently the only commercial/industrial pellet manufacturer in the region is Renewafuel in Gwinn, which has operated sporadically over the past two years. Long-term plans for this plant are uncertain. The plant would be direct competition for market share. There are a number of primary mills and wood-fired CHP/boilers in the procurement area that may directly compete for raw materials.

#### OPERATIONAL WOOD PELLET PLANTS IN THE NORTHERN GREAT LAKES REGION – 12/18/12

COMPANY	CITY, STATE	EST. TONS/YR	EST. TON CAPACITY	PRODUCT
VULCAN WOOD PRODUCTS	VULCAN, MI	10,000	25,000	RESIDENTIAL, BEDDING
RENEWAFUEL	GWINN, MI		100,000	COMMERCIAL
WOOD FIBERS	NIAGARA, WI	40,000	65,000	RESIDENTIAL, BEDDING, WOOD FLOUR, BBQ
GREAT LAKES RENEWABLE ENERGY	HAYWARD, WI	33,000	67,000	RESIDENTIAL, BEDDING, BBQ
INDECK LADYSMITH BIOFUEL CTR.	LADYSMITH, WI	36,000	100,000	RESIDENTIAL, BEDDING
MARTH WOOD SHAVING SUPPLY	PESTIGO AND MARATHON, WI	68,000	125,000	RESIDENTIAL, BEDDING, BBQ

#### WOOD-FIRED COMBINED HEAT & POWER (CHP) UNITS LOCATED IN MI & WI<sup>7</sup> (IN ADDITION TO THOSE ABOVE)

CITY, STATE	FACILITY NAME	APPLICATION	CAPACITY
BARAGA, MI	ALL-WOOD, INC.	WOOD PRODUCTS	150 KW
ISHPEMING, MI	ROBBINS WOODBURNING COGEN PROJECT	Misc. MFG	500 KW
L'ANSE, MI	WARDEN	ELECTRICAL GEN.	18 MW

#### PRIMARY FOREST-INDUSTRY MILLS (PURCHASE FOREST PRODUCTS)

CITY, STATE	COMPANY	TYPE
NORWAY, MI	VERSO PAPER CO.	PULP/PAPER/CHP
CASPIAN, MI	NEPCO	ANIMAL BEDDING/PET LITTER
SAGOLA, MI	LOUISIANA PACIFIC	OSB/ WOOD BOILER
GWINN, MI	POTLATCH	LUMBER*
ESCANABA, MI	NEW PAGE	PULP/PAPER/ CHP
PRENTICE, WI	BIEWER LUMBER	LUMBER*
PARK FALLS, WI	FLAMBEAU PAPER CO.	PULP/PAPER/CHP
DULUTH, MN	SAPPI	PULP/PAPER/ WOOD BOILER

\* PRODUCED FROM PULPWOOD SIZED MATERIAL

#### MICHIGAN WOOD BOILERS IN PROCUREMENT AREA

CITY	COUNTY	LOCATION NAME	BOILER USE
COVINGTON	BARAGA	COVINGTON REST HOME	HOT WATER
THREE LAKES	BARAGA	THREE LAKES MOTEL	HOT WATER
FELCH	DICKINSON	NORTH DICKINSON SCHOOL	HOT WATER
QUINNESEC	DICKINSON	INTERNATIONAL PAPER CORP.	POWER BOILER
SAGOLA	DICKINSON	LOUISIANA PACIFIC CORP.	HOT WATER
BESSEMER	GOGEBIC	BESSEMER PLYWOOD CORP.	PROCESS BOILER
BESSEMER	GOGEBIC	POWDERHORN LODGING ASSOCIATION	HOT WATER
IRONWOOD	GOGEBIC	BLACK RIVER LODGE	HOT WATER
MARINESCO	GOGEBIC	NORCO OF MICHIGAN	POWER BOILER
WAKEFIELD	GOGEBIC	WAKEFIELD HIGH SCHOOL	STEAM HEAT
CALUMET	HOUGHTON	CALUMET HIGH SCHOOL	STEAM HEAT
DOLLAR BAY	HOUGHTON	HORNER FLOORING CO.	POWER BOILER
HOUGHTON	HOUGHTON	NORTHERN HARDWOOD DIVISION	PROCESS BOILER
LAKE LINDEN	HOUGHTON	KALLIO REAL ESTATE	HOT WATER
PAINSDALE	HOUGHTON	CAMP KITWIN	HOT WATER
SIDNAW	HOUGHTON	WOOD DEVELOPMENT CORP.	POWER BOILER
AMASA	IRON	CONNOR SPORTS FLOORING	PROCESS BOILER
CRYSTAL FALLS	IRON	BEV'S SUPPER CLUB	HOT WATER
GWINN	MARQUETTE	SAWYER STEAM Co.	POWER BOILER
ISHPEMING	MARQUETTE	ROBBINS FLOORING Co.	POWER BOILER
ISHPEMING	MARQUETTE	RIDGE STREET APPT.	HOT WATER
ISHPEMING	MARQUETTE	WAYSIDE CLUB	HOT WATER
MARQUETTE	MARQUETTE	JILBERT'S DAIRY BARN	POWER BOILER
BERGLAND	ONTONAGON	NORDINE'S FOODLAND	HOT WATER
ROCKLAND	ONTONAGON	HENRY'S INN	HOT WATER
WHITE PINE	ONTONAGON	WHITE PINE ELECTRIC POWER	POWER BOILER

<sup>7</sup> Energy.gov and ICF International. Combined Heat and Power Units. [www.eea-inc.com/chpdata/States/WI.html](http://www.eea-inc.com/chpdata/States/WI.html); [MI.html](http://MI.html)



## BENCHMARKING OF EXISTING/PROPOSED PLANTS

In keeping with growth projections, the international market for wood pellets (no specific grade) increased more than 200 percent between 2002 and 2006, causing global production to increase from 8 million tons in 2007 to more than 13 million tons in 2009 (U.S. Endowment for Forestry, 2011). Canada has been the major overseas supplier of pellets to Europe, reaching about one million tons in shipments in 2010.

As demand for commercial/industrial grade wood pellets grows, so does the opportunity for exporting. As a result of this increased demand, wood pellet mills are being built to utilize roundwood versus historically utilized traditional primary sawmill residue, especially in the southern US. This has resulted in some of the largest pellet mills in the US and the world.

- Green Circle Bio Energy pellet plant in Cottondale, FL has a 560,000 ton/year capacity, (IEA Bioenergy, 2011). The target market for their finished product is primarily for export to the EU, specifically the power generating industry for co-firing in coal-based power plants.
- Georgia Biomass, in Waycross, GA officially opened its pellet facility in 2Q/11, paving the way for an additional consumption of 1.5 million green tons of wood fiber for pellet production. All production is expected to be exported to Europe.
- New England Wood Pellets officially opened its 85,000 ton capacity pellet plant in Deposit, NY.
- Trebio Renewable Biomass in Quebec, Canada should complete its new 130,000-ton capacity pellet plant in the next few months.

## CURRENT NORTH AMERICAN PLANTS

(INDUSTRIAL PELLETS FOR EXPORT)

COMPANY	CITY, STATE	CAPACITY (TONS)	STATUS
GREEN CIRCLE BIO ENERGY	COTTONDALE, FL	560,000	OPEN
GEORGIA BIOMASS	WAYCROSS, GA	750,000	OPEN
TREBIO RENEWABLE BIOMASS	QUEBEC, CAN	143,300	OPEN
ENVIVA	AHOSKIE, NC	385,000	PROD. STARTING NOV. 2012
WESTERVELT RENEWABLE ENERGY	ALICEVILLE, AL	308,642*	PROD. STARTING NOV. 2012
GERMAN PELLETS	TYLER, TX	550,000	CONST. STARTED 6/2012
ENVIVA PELLETS SOUTHAMPTON	SOUTHAMPTON, VA	551,146	CONST. STARTED 7/25/12
ENVIVA LP	NORTHAMPTON, NC	551,146	"UNDER CONST." 2012
F.E. WOOD & SONS	BALDWIN, MA	300,000	"UNDER CONST." 2012
POINT BIO ENERGY	BATON ROUGE, LA	440,000	PROPOSED 2013 STARTUP
FRAM RENEWABLES	LUMBER CITY, GA	138,000	PROPOSED 2012 STARTUP
ZILKHA BIOMASS	SELMA, AL	440,000	PROPOSED 2013 STARTUP
DRAX BIOMASS INTERNATIONAL, INC.	GLOSTER, MS	495,000	TBA DEC. 2012
ENVIRA	VA	550,000	TBA NOV. 2012
ENVIRA	NC	550,000	TBA NOV. 2012
GENERAL BIOFUELS GEORGIA, LLC	SANDERSVILLE, GA	440,000	PROPOSED 2014 STARTUP
ENOVA ENERGY GROUP	GA/SC	495,000	PROPOSED 2014 STARTUP
ENOVA ENERGY GROUP	GA/SC	495,000	PROPOSED 2014 STARTUP
ENOVA ENERGY GROUP	GA/SC	495,000	PROPOSED 2014 STARTUP
FRAM RENEWABLE FUELS	HAZLEHURST, GA	550,000	PROPOSED 2 <sup>ND</sup> PLANT

\*Expandable System – capacity to increase up to 617,284 tons.

## MARKETING STRATEGY

### PROPOSED PRODUCT ADVANTAGES

Regarding residential pellets, having a consistently high quality product is the main advantage available to any pellet manufacturer. Inconsistent and poor quality pellets have been a major issue with many American residential pellet manufacturers. Producing a consistent softwood or mixed softwood/hardwood pellet will be a distinct advantage over many existing pellet plants.

A professionally designed bag with accurate product information is essential to capturing residential pellet market share. Bear Mountain pellets (softwood), although one of the higher priced wood pellets on the market, is one of the most consistent sellers because of their product quality and name recognition.

Being located on rail is an advantage over many existing pellet plants that can greatly reduce transportation costs and open up more distant markets.

### PROPOSED PRODUCT NICHE

A variety of niches could exist, including:

- A substantial effort to promote residential wood pellet use in the Western Upper Peninsula would establish a local, potentially loyal, market. This could involve setting up a subsidiary that manufactured or at least distributed and installed residential pellet stoves, which would establish vertical integration.
- A business to manufacture/sell and/or install small-end commercial pellet boilers for resorts, ski lodges, businesses, municipal buildings, etc., would also help establish a definitive market.
- BBQ pellets made from local tree species that have high demand in that market (cherry, sugar maple, oak) could help establish a small, but definitive, market.
- Animal bedding made from aspen for horse stables/farms has potential (aspen availability has increased due to the closing of Smurfit Stone Plant).
- Producing pallets for transporting pellets would be another step towards vertical integration and could be a source of some raw material for pellets. This could also potentially reduce pallet costs by up to 50%.

### MARKET ANALYSIS

Sales of pellet burning appliances fell during 2009 and 2010 (see the following table from the Hearth, Patio and Barbeque Association). However, a significant jump is expected in 2011 with the increase in oil prices.

**U.S. HEARTH INDUSTRY UNIT SHIPMENTS – 2001-2010**

Pellet Appliances	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Freestanding Stoves & Inserts	53,473	33,978	48,669	67,467	118,749	133,106	54,032	141,208	46,133	44,269
% Change	73%	-36%	43%	39%	76%	12%	-59%	161%	-67%	-4%

There are approximately 1 million homes (PFI 2010) in the US using wood pellets for heat, via freestanding stoves, fireplace inserts, and even furnaces with an estimated equal number of appliances that have been purchased and are not in use for various reasons. Pellet fuel for heating can also be found in large-scale environments, such as schools and prisons. North American pellets are produced in manufacturing facilities in Canada and the US, and are available for purchase at fireplace dealers, nurseries, building supply stores, feed and garden supply stores and some discount merchandisers.

The pellet stove has significant differences from traditional wood stoves. A major difference is the feedstock. Pellet stoves require pellets and cannot burn traditional firewood. The stove itself features convenient items not possible on conventional wood stoves. A hopper bin is integrated with the stove that may hold as much as 90 pounds of pellets, which are automatically fed by an auger to the combustion box. Thermostatic controls allow for precise monitoring of temperature. The stove has an installed price ranging from \$2,000 to over \$4,000

depending upon stove models, sizes, usage patterns, and housing characteristics. A full-use pellet stove will burn between 3-7 tons of pellets per year depending on house size and insulation/weatherization of the house.

The European market is more advanced and mature than the domestic market due largely to European governments subsidizing wood pellet stoves for several years. This concept has been addressed in the American Recovery and Reinvestment Act. The act makes available, a consumer tax credit of up to 30% (maximum of \$1,500) for consumers who purchase a biomass-burning stove that runs at 75%+ efficiency as measured using a lower heating value.

### **BIOMASS PRODUCT INDUSTRY TRENDS**

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The trend towards biomass is much more apparent in Europe than in North America. In the US, renewable energy emphasis is much greater for solar, wind, and geo-thermal than for wood and other biomass. Wood is popular with many power companies trying to reach renewable energy goals because it is cheaper on a commercial scale than other options, but efficiency rates for electrical production are very low and are not an optimal use of wood. Propane and fuel oil users are the most logical targets for conversion to pellet fuel, as evident in the northeastern U.S. Current prices for natural gas have caused those initially interested in wood fuel to shelve their conversion plans.

With the EPA Boiler MACT regulations recently being finalized, it is expected that many on-hold wood boiler installations will now be able to make a definitive decision on whether to move ahead or not. See Appendix VI for more information.

### **MARKETING STRATEGY**

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- Develop a substantial local market for PPP products by converting residences and businesses to pellet stoves from fossil fuel or firewood appliances will be essential.
- Develop a consistently high quality residential pellet will help develop national markets. An on-rail location will allow for economical shipping, compared to plants that only have a trucking option.

### **PRODUCT STRATEGY**

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In order for PPP to succeed in its market segment, several key success factors must be realized:

- Pellet quality and consistency is the predominant concern among pellet appliance dealers and consumers. Pellet stove dealers are reluctant to carry an unproven or inferior product. Stove dealers often have maintenance contracts with customers to ensure that their stoves are operating properly. The use of lower quality pellets will cause stoves to malfunction more often, which will increase the dealers' costs of service contracts. Therefore dealers have an incentive to sell only high quality pellets as they can lower their servicing costs and maintain profitable margins.
- Quality control needs to begin well before initial distribution of the PPP products to appliance dealers. The machinery startup period will be an important aspect of quality control and will result in the consumption of several hundred tons of feedstock. The purpose of the startup phase is to become familiar with the equipment and to minimize potential production problems in the long-term operations. PPP will experiment with different feedstocks, feedstock combinations, moisture content, production rate, and other variables to ensure the production of a consistent, high-quality product.
- Control of sales growth will be important as producing a quality product and having the ability to fill orders in a timely fashion will be essential. The strategy will be to grow sales in conjunction with production capabilities.
- Another aspect of securing/retaining markets is consistent packaging and wrapping of the product to ensure delivery of intact and undamaged product. This has been a failing of several regional manufacturers.

## **ADVERTISING AND PROMOTION**

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PPP's advertising efforts will initially concentrate on developing a dealer network that accepts PPP pellets and promotes them to their customers. This will be accomplished by providing dealers with samples, doing demonstrations, and acquiring feedback from dealers regarding methods to improve both product and service. Local advertising will consist of newspaper articles, mailings, and workshops that explain wood pellet heating and grant programs that might be available to offset initial pellet stove investments. Advertising in appropriate publications and at conferences/trade shows will also be implemented.

PPP intends on making the PPP brand the premier pellet product in the Lake States region by concentrating on quality, as well as growing the company according to increasing demand for the high quality PPP product. Pellet manufacturing industry surveys indicate that there is considerable loyalty or allegiance that is fostered by word-of-mouth among dealers and consumers.

# OPERATIONS

## FORMS OF OWNERSHIP

	Cooperative	Unincorporated Cooperative Association (UCA)	Corporation (C or S)	Limited Liability Company (LLC)	Partnership	Proprietorship
<b>Owners</b>	Members*	Members; includes patron and investor classes	1+ shareholders; S Corp limited to 100 shareholders	Members (one or more)	At least two individuals or entities	Individual
<b>Membership requirements</b>	Determined by bylaws. Usually one share/fee.	Determined by bylaws	One share of stock	At members' discretion	At partners' discretion	At owner's discretion
<b>Business purpose</b>	Meet member needs for goods/services; earn return on owner investment	Meet member needs for goods/services; earn return on owner investment	Earn return on owner investment	Earn return on owner investment; provide member employment	Earn return on owner investment; provide partner employment	Earn return on owner investment; provide owner employment
<b>Financing</b>	Member and/or outside investor shares; retained profits	Patron and investor member shares; retained profits	Stock sales; retained profits	Members proportional to investment or by agreement	Partners in proportion to investment or by agreement	Proprietor
<b>Profit receiver</b>	Members in proportion to use; preferred stockholder proportional to investment, up to 8%	Patrons in proportion to use; patron and investor members proportional to investment	Stockholder proportional to investment	Members proportional to investment or by agreement	Partners proportional to investment or by agreement	Proprietor
<b>Income tax payer</b>	Members on qualified profit distributions; Pay on non-qualified and unallocated profits	Members pay individual rate, or can elect to be taxed as cooperative	C: pay on profits, stockholders pay capital gain rates on dividend; S: stockholders pay their rate on profit share	Members pay individual rate, or can elect to be taxed as a corporation	Partners pay individual rate	Proprietor pays individual rate
<b>Legal liability of owner</b>	Limited to investment	Limited to investment	Limited to investment	Limited to investment	General partners: Unlimited Limited partners: limited to investment	Unlimited

\*Preferred shareholders may include nonmembers who may vote on certain issues, such as dissolution, but not for directors. Preferred stock shareholders do not set policy.

## LOCATION

### SITE RECOMMENDATION

#### SITE SPECIFICS

Location .....White Pine, Ontonagon County  
 Size/Dimensions..... 20 acres  
 Zoning .....Industrial  
 Restrictions/Easements ..... None  
 Past Use .....Mining  
 Surrounding Land Use.....Industrial

#### GENERAL SITE ASSESSMENT

Topography.....Fairly Level  
 Wetlands..... None  
 Flood Hazard ..... None  
 Environmental Concerns..... None  
 Water/Sewer ..... Carp Lake Twp  
 Electric ..... Upper Peninsula Power Company

#### LOCAL FIRE AND POLICE

Police .....Ontonagon County Sheriff’s Department  
 Fire .....White Pine Fire Department

#### TRANSPORTATION ACCESS

Railroad.....CN&N  
 Local Ports.....Ontonagon, MI (20 miles)

### SITING RECOMMENDATIONS

It is highly recommended that the wood pellet plant be placed near a railway. Many wood pellet plants in this region have neglected having rail access. Not siting near rail has severely limited their ability to take advantage of many national/international market opportunities. A map of area railways can be found in Appendix VII.

Being near rail reduces site locations in Ontonagon County, with the recent closure of the Escanaba and Lake Superior Railroad line between Ontonagon and Rockland. Rockland and White Pine would be the two most logical locations if considering rail service. Current information, available rail, building site, and potential compatible industry makes White Pine an obvious location for a wood pellet plant in Ontonagon County.

Initially, locating in Ontonagon might seem logical because of the ability to export to Europe due to having a port on Lake Superior. But, since most export contracts are for substantial volumes that

cannot be met by one pellet plant and without rail service, it would not be cost-effective to truck pellets from other plants to Ontonagon. Information on the Ontonagon port can be found in Appendix IX. Also, it is questionable whether exporting pellets to Europe on a consistent basis could be profitable from this location.

### PERMITTING AND ZONING

The following are the typical permits for wood pellet plants. Please note that the timeline is subject to change due to unforeseen events or complications.

<b>Permits needed:</b>	<b>New Source Air Permit and a Renewable Operating Permit*</b>
Cost:	\$0
Approximate Timeline:	180 days maximum by law; typically 60-90 days
Consultant Needed:	Yes
Michigan Dept. of Environmental Quality	Randy Telez (517) 373-7087.

\*After the plant is operational, this permit may be necessary if certain emission thresholds are met.

### IMPACT ON LOCAL ROUNDWOOD MARKET

If all the raw material was obtained from roundwood for a 100,000 ton wood pellet plant, approximately 87,000 cords/ year would be needed. This amount of material should have little impact on other roundwood markets based on the resource analysis detailed in Appendices I and X. An exception could be if it was decided to use a specific species for pellet production. Depending on the species, this could have an impact on local pricing and potential availability. If a softwood or softwood mix pellet is produced, the following shows the potential that exists based on current resource numbers.

#### TOTAL TIMBER RESOURCES IN MICHIGAN AND WISCONSIN (GREEN TONS)

	Net Growth	Removals	Mortality
<b>Eastern white and red pine</b>	1,015,310	139,753	68,900
<b>Jack pine</b>	68,810	187,027	61,127
<b>Spruce and balsam fir</b>	416,154	265,315	793,747
<b>Cottonwood and aspen</b>	454,716	692,774	820,094

## ENVIRONMENTAL IMPACT

See Appendices I and IX for resource assessment/ analysis data

**Renewable** | Wood fuel has several environmental and economic advantages compared to fossil fuels. It is grown locally, causing it to have an economic impact on several levels (landowner, logger, log trucker, pellet plant labor, finished product trucker, and home/business owner that uses pellets). Trees are naturally regenerated, which means a dependable supply if harvested in a sustainable manner. Proper forest management will ensure that forests are not depleted and new stands of trees can be regenerated appropriately.

**Low Carbon Emissions** | Wood combustion produces marginal net (approximately 5%) carbon dioxide (CO<sub>2</sub>) emissions. This is because the CO<sub>2</sub> generated during wood combustion equals the CO<sub>2</sub> consumed during the lifecycle of the tree. Transporting and processing wood using petroleum in the processing/ transportation equipment does generate some excess CO<sub>2</sub>.

**Minimal Metals and Sulfur** | Wood fuel contains minimal heavy metals and has extremely low levels of sulfur; therefore, combusting wood fuel will not create acid rain pollution through sulfur emissions.

**Minimal Ash** | Pellet fuel burns more completely than many other combustibles. Additionally, what ash is created can be used safely for a soil and cement amendment if the raw material is forest based.

**Controllable Particulates** | Particulate emissions from wood are controllable through standard emission control devices such as bag houses, cyclone separators, fly-ash injectors, and electronic precipitators.

## REQUIRED MANAGEMENT EXPERTISE

### ROUNDWOOD PROCUREMENT & INVENTORY CONTROL EXPERTISE

The most important aspect of procurement is developing raw-material quality control specifications that are adhered to while building long-term relationships with the suppliers who consistently meet specifications. Paying a fair price for a specific product will insure a steady supply of raw material. As loads are delivered, or shortly thereafter, they should be inspected to verify that they meet product specifications. A system needs to be in place to warn/penalize suppliers for bringing in non-compliant loads.

Setting up a system to purchase by the cord as opposed to by the ton would eliminate the issue of suppliers trying to deliver when the wood is at its heaviest (wettest). Paying a bonus for drier wood would offer an incentive to suppliers to deliver drier wood as well as cut drying costs for the plant.

During summer months, insects in the softwoods could be an issue. Debarking softwood as soon as possible will eliminate most insect problems.

### MANAGEMENT EXPERTISE

Having an experienced President/CEO to oversee everything from workforce hiring to raw material procurement to final product sales and shipping is essential to an efficiently operating plant. It is more beneficial to have an effective administrator/ manager than it is to have experience in the wood pellet industry. Having someone to oversee the entire operation in an efficient manner is critical.

Having an effective marketing manager is as important as having a competent plant manager. While the plant manager is responsible for producing a high-quality product, the marketing manager is responsible for making

sure there is a paying consumer base to whom to distribute the product. This person is responsible for establishing a dealer network that is capable of utilizing all of the plant’s pellet production. Having a person experienced in the wood pellet industry, although not a must, would be highly recommended.

Selecting a contractor with a proven record in pellet plant construction/layout is essential. There are numerous contractors who claim expertise in pellet plant construction/design, but there are very few with proven legitimate track records. It is highly recommended to go through the bidding process with a request for references and proof of successful operating pellet plants that they have constructed.

**PLANT MANAGER EXPERTISE**

Having a plant manager with experience in producing a quality pellet from roundwood is recommended; at the very least bringing in an experienced consultant to train a plant manager is a necessity.

One of the biggest problems in wood pellet manufacturing industry has been the switch from utilizing a consistent manufacturing residue (sawdust) to producing pellets using roundwood directly from the forest. Roundwood needs to be processed to a suitable consistency and moisture content. In addition, a wide range of issues from lack of a consistent species mix, excessive bark content, dirt/contaminant content, improper drying, and improper sizing of raw materials has caused numerous problems for many pellet plants

**CAPACITY**

As mentioned earlier, a 100,000-ton plant with four pellet presses would yield the highest profit margin, however, there currently is not the demand to sustain a plant of this size, as illustrated by the table on page 18. This plan focuses on a three-pellet press operation with a plan to reach the 60,000 ton per year level in the third year. Reaching this level of production is essential to achieving long-term sustainability, keeping in mind a possible goal of expanding to a 100,000-ton operation in the future.

**MANUFACTURING PROCESS**

<b>MANUFACTURING</b>	The production of a high-quality pellet is essential to the plant’s success. Several factors influence pellet quality: pellet die specifications, roller design, raw material input consistency, and a properly trained workforce.
<b>RAW MATERIAL</b>	Truckloads of raw materials will be brought to the site daily. A large percentage will be eight foot long pulpwood-sized material. By processing specific raw material in the same manner, the end product will have consistent moisture content, heat value, ash content, and burn characteristics.
<b>DEBARKER</b>	All roundwood will be debarked by a contractor and piled for chipping.
<b>CHIPPER</b>	All debarked wood will be chipped by a contractor at the plant.
<b>TRAMMEL SCREEN</b>	From a hopper, the wood chips go through a trammel screen where oversized pieces are removed and fine dust is screened out.
<b>INITIAL HAMMER MILL</b>	A hammer mill will be located at the beginning of the milling process. This machine (the “hog”) takes wood chips and breaks them down into a consistent smaller size, making drying quick and consistent.
<b>DRYERS</b>	Since whole green wood (approx. 45% moisture) will be used as the predominant raw material, it will have to be dried to a consistent moisture level at approximately 300°F. A large triple pass drum dryer with a 12-ton per hour capacity will be used for drying.



<b>SECONDARY HAMMER MILL</b>	After drying, the material moves through this hammer mill to reduce the wood to sawdust-sized material.
<b>TEMPERING TANKS</b>	After the hammer mill properly sizes the material, it is held in a tempering tank for approximately 30 minutes to relax the fibers. There is typically one pre-pellet tempering tank for each pellet mill.
<b>THE PELLET MILL (PELLETIZER)</b>	After the tempering, the processed wood is pressed through dies at high pressure. This process causes the material to heat up and release natural lignins in the wood that binds the material together. The pelletizer also determines the density, diameter, durability, and length of the pellet.
<b>COOLING AND STORAGE</b>	The pellets come out of the mill between 200°F and 250°F and in soft condition. A cooling tower is used to bring the temperature down and harden the pellets. After cooling, they are usually stored in a large silo to await bagging or bulk distribution.
<b>BAGGING AND BULK</b>	The industry's common method for distribution will be used, which is to put the pellets into 40-pound plastic bags and stack them on pallets or skids. These pallets will contain one ton of fuel. Bagging pellets costs approximately \$26 per ton, which includes plastic bags, pallets, outer cover bags, and shrink wrap, but excludes the labor and equipment to stack and wrap them. These pallets are then loaded on trucks or rail cars arranged for by the customer.

Bulk pellets will be loaded from the pellet mill silo directly into trucks for delivery to bulk storage containers at the customer's location. The bulk trucks are more expensive than regular flatbed trucks, but are a much more efficient system of transferring and delivering pellets.

## QUALITY CONTROL REQUIREMENTS

PPP pellets will provide stove retailers and consumers with a standard for product quality and supplier accountability. Testing will be conducted according to the Pellet Fuels Institute (PFI) standards.

Each batch of pellets will undergo testing at the plant as specified by the PFI to ensure optimum characteristics, including:

1. Moisture Content – an indication of pellet quality as well as heating value
2. Pellet Fines – a measurement to limit any light dust
3. Other – bulk density, pellet diameter, pellet length, etc.

### **Additional Independent Testing (Also According to PFI Standards)**

Pellets will randomly be audited by an independent test lab. In addition, pellets will also be checked for:

1. Ash Content – the quantity of non-combustible minerals in the pellets
2. Heating Value – to determine how much heat is actually produced
3. Pellet Durability – an indication of the ability of the pellets to be transported
4. Chloride Concentration – sodium chloride and other salts can be highly corrosive

## FINANCIAL INFORMATION

### PROJECTED PROFITS

#### WOOD PELLET MILL EQUIPMENT AND COST

\$3,428,052

#### FEEDSTOCK-RELATED EQUIPMENT & OTHER COSTS

It is anticipated there will be an \$8/ton cost for debarking and chipping.

#### INVESTMENT

Utilizing an existing building site on rail at the White Pine mine location is an essential part of this project. Exact appraisal value of the land has not been determined. Beyond the land value, the goal would be to raise \$1.5 million in equity and obtain \$4,799,000 in debt financing.

#### EQUITY

This business plan or a revised version will be presented to potential investors to secure equity.

#### DEBT

Numerous debt financing options exist, including traditional bank financing and grant/loans (listed in the "Source and Use of Funds" below).

#### NEW MARKETS TAX CREDIT PROGRAM (NMTC)8

The NMTC permits investors to receive a tax credit in exchange for making equity investments in specialized financial institutions called Community Development Entities (CDEs). The credit totals 39% of the original investment amount and is claimed over a period of 7 years (5% for each of the first 3 years, and 6% for each of the remaining 4 years). The CDE investment cannot be redeemed before the end of the 7-year period. To receive NMTC awards, the organization must be certified as a CDE:

- be a domestic corporation or partnership at the time of application
- demonstrate a primary mission of serving or providing investment capital for low-income communities or low-income persons
- maintain accountability to residents of low-income communities through representation on a governing board or advisory board to the entity

<sup>8</sup> Community Development Financials Institution Funds, [http://www.cdfifund.gov/what\\_we\\_do/programs\\_id.asp?programID=5](http://www.cdfifund.gov/what_we_do/programs_id.asp?programID=5)

### FEEDSTOCK COST AND AVAILABILITY

#### RECONCILIATION TO PRICE USED IN PROJECTED PROFIT STATEMENT

The price of \$35/ton is an estimate used in this plan throughout the years of operation for delivered roundwood. Although delivered prices have fluctuated for pulpwood at various plants throughout any given year, on average over the past 50 years pulpwood prices have stayed much lower than the inflation rate. Depending on the species and raw material specification, it may be possible to purchase materials for an even lower per ton rate.

#### THE WOOD TO ENERGY PROCESS

Although relatively simple in explanation:

- Tree is harvested and cut into 8' lengths (pulpwood)
- Pulpwood is delivered to PPP
- Contractor debarks and chips pulpwood
- Chips are hammermilled and dried
- Wood is further reduced in size by a secondary hammermill and then pelletized
- Pellets are then sold to dealer or end users

In actuality, inefficiencies or failures at any step in the process after the wood is delivered to PPP can result in decreased profitability and even total plant failure.

### PELLET REVENUE

Though prices have fluctuated from \$150 to \$200 per ton in this region, \$170/ton has been a fairly consistent price for premium bagged pellets. One-ton tote prices have averaged \$160/ton and bulk prices \$150/ton. Other pellets such as animal bedding and BBQ pellets may become viable product options but initially residential pellets will be the primary product.

### COST OF PROJECT

The initial capital/construction costs will be \$4 million, with \$8.623 million being the annual operating costs for year three.

## SOURCE AND USE OF FUNDS

### FUNDING OPPORTUNITIES: GRANTS

<b>USDA Value-Added Grant (Spring 2013)</b>	To be eligible, the organization must be 51%+ controlled by producers (loggers and/or landowners).
<b>US Forest Service Grant</b>	Forest Product Lab Wood Energy grant RFP is due on April 8, 2013 and will be recurring every year.
<b>Renewable Energy America Program – USDA Rural Development</b>	<ul style="list-style-type: none"> <li>▪ This agency accepts applications to purchase renewable energy systems and make energy efficiency improvements for agriculture producers and rural small businesses in eligible rural areas. The forms of funding are grants, guaranteed loans, and combined guaranteed loans and grant applications.</li> <li>▪ Minimum grant request for renewable energy systems is \$2,500; maximum is \$500,000.</li> <li>▪ Minimum grant request for energy efficiency improvements is \$1,500; maximum is \$250,000.</li> <li>▪ The maximum amount of a guaranteed loan made to a borrower will be \$10 million. About 50 percent of the grant funding is reserved for the grant portion of combination grant and guaranteed loan applications. The guarantee fee amount is 1 percent of the guaranteed portion of the loan. The annual renewal fee is 0.125 percent of the guaranteed portion of the loan.</li> </ul>
<b>Dept. of Energy Grants</b>	<ul style="list-style-type: none"> <li>▪ Announced on a perpetual basis.</li> <li>▪ To date, emphasis has been on liquid bio-fuels (i.e. ethanol, bio-diesel, and bio-oil) rather than solid-state fuels (i.e. wood pellets).</li> </ul>
<b>USDA 9006 Grant/Loan Program</b>	<ul style="list-style-type: none"> <li>▪ Provides grants and loans to rural small businesses and agricultural producers for the purchase and installation of renewable power projects.</li> <li>▪ Energy Trust will provide eligible approved participants with cost-shared financial assistance for hiring a grant-writing consultant to help them apply for 9006 grants for certain new renewable energy projects.</li> </ul>
<b>Michigan Dept. of Energy</b>	<ul style="list-style-type: none"> <li>▪ Maximum grant amount was \$25,000 in 2012.</li> <li>▪ We expect to see more proposal requests from this agency.</li> </ul>
<b>Michigan Community Development Block Grant (CDBG) Program</b>	<ul style="list-style-type: none"> <li>▪ The CDBG uses funds received from the U.S. Department of Housing and Urban Development (HUD). Grants are eligible to counties, townships, villages, and cities with populations under 50,000 for economic development, community development, and housing projects.</li> <li>▪ Michigan receives about \$36 million in federal CDBG funds annually, and about 150 projects are funded statewide with this money.</li> <li>▪ Eligible economic development projects are those that involve public infrastructure directly related to a for-profit private business location or expansion. One result of this type of project should be the creation and/or retention of permanent jobs, and at least 51% of the jobs held by low and moderate-income people. Eligible community projects are those with economic development impacts that deal with critical infrastructure needs in communities with areas of low- and moderate-income people.</li> </ul>

### FUNDING OPPORTUNITIES: LOANS

<b>Small Business Administration (SBA) Programs (504)</b>	<ul style="list-style-type: none"> <li>▪ The primary loan program is the 7(a) Loan Guaranty, in which the money from the loan can be used to expand and renovate a business' machinery. This loan guarantees major portions of loans made to small businesses.</li> <li>▪ The SBAExpress loan is available for loans up to a maximum of \$350,000 and guarantees up to 50% of the loan. Loans under \$25,000 will not need collateral. Maturities are about five to seven years for working capital and up to 25 years for real estate and equipment.</li> <li>▪ CAPLines is a revolving line of credit with five loan programs. These five programs are financing seasonal working capital needs; financing direct costs for construction, service and supply contracts; financing purchase orders by retrieving advances against existing</li> </ul>
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	<p>inventory and accounts receivable; and consolidate short-term debt.</p> <ul style="list-style-type: none"> <li>Export Working Capital Program (EWCP) gives working capital financing for export activities. This loan cannot be used to refinance fixed assets, marketing, or setting up operations abroad.</li> </ul>			
<p><b>USDA Rural Development Business and Industry Guaranteed Loans (B&amp;I)</b></p>	<p>A borrower may be a cooperative organization, corporation, partnership, or other legal entity organized and operated on a profit or nonprofit basis; an Indian tribe on a Federal or State reservation or other Federally recognized tribal group; a public body; or an individual. A borrower must be engaged in or proposing to engage in a business that will:</p> <ul style="list-style-type: none"> <li>Provide employment;</li> <li>Improve the economic or environmental climate;</li> <li>Promote the conservation, development, and use of water for aquaculture; or</li> <li>Reduce reliance on nonrenewable energy resources by encouraging the development and construction of solar energy systems and other renewable energy systems.</li> </ul> <p>Loan purposes must be consistent with the general purpose contained in the regulation. They include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>Business and industrial acquisitions when the loan will keep the business from closing, prevent the loss of employment opportunities, or provide expanded job opportunities</li> <li>Business conversion, enlargement, repair, modernization, or development</li> <li>Purchase and development of land, easements, right-of-ways, buildings, or facilities</li> <li>Purchase of equipment, leasehold improvements, machinery, supplies, or inventory</li> </ul> <p>The total amount of Agency loans to one borrower must not exceed \$10 million. The Administrator may, at the Administrator’s discretion, grant an exception to the \$10 million limit for loans of \$25 million under certain circumstances. The Secretary may approve guaranteed loans in excess of \$25 million, up to \$40 million, for rural cooperative organizations that process value-added agricultural commodities.</p>			
<p><b>Michigan Economic Development Corporation – Capital Access Program (CAP)</b></p>	<p>The CAP is an innovative program available through the Michigan Economic Development Corporation (MEDC) to assist businesses with capital needs. It uses small amounts of public resources to generate private bank financing, providing small Michigan businesses access to bank financing that might not otherwise be available.</p> <table border="0" data-bbox="443 1228 1476 1459"> <tr> <td data-bbox="443 1228 852 1459"> <p>Direct Bank-Business Transaction</p> <ul style="list-style-type: none"> <li>Loans under CAP are private transactions between bank and borrower.</li> <li>MEDC plays no role in the bank’s decision to make the loan or in setting its terms.</li> <li>Bank assumes the risk of the loan.</li> </ul> </td> <td data-bbox="852 1228 1193 1459"> <p>Flexible, Non-Bureaucratic</p> <ul style="list-style-type: none"> <li>CAP loans can be long or short term, term loan, or line of credit.</li> <li>Bank has flexibility to recast, extend, or refinance the loan to address needs of the business owner.</li> </ul> </td> <td data-bbox="1193 1228 1476 1459"> <p>Eligible Borrowers</p> <ul style="list-style-type: none"> <li>CAP loans are available to most businesses located in Michigan that satisfy the bank’s criteria.</li> </ul> </td> </tr> </table>	<p>Direct Bank-Business Transaction</p> <ul style="list-style-type: none"> <li>Loans under CAP are private transactions between bank and borrower.</li> <li>MEDC plays no role in the bank’s decision to make the loan or in setting its terms.</li> <li>Bank assumes the risk of the loan.</li> </ul>	<p>Flexible, Non-Bureaucratic</p> <ul style="list-style-type: none"> <li>CAP loans can be long or short term, term loan, or line of credit.</li> <li>Bank has flexibility to recast, extend, or refinance the loan to address needs of the business owner.</li> </ul>	<p>Eligible Borrowers</p> <ul style="list-style-type: none"> <li>CAP loans are available to most businesses located in Michigan that satisfy the bank’s criteria.</li> </ul>
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**FUNDING OPPORTUNITIES: INCENTIVES**

<p><b>Forest Products Processing Renaissance Zones (FPPRZ)</b></p>	<p>The application process begins by having a community/company official(s) meet with a Michigan Economic Development Corporation (MEDC) account manager to discuss a project in detail. FPPRZ applications are turned in to the MEDC. The area in which an FPPRZ is proposed must approve a resolution for abatement of taxes and the applicants must show the positive economic impact the project will have on the municipal and state government.</p> <p>Facilities on this renaissance zone will not have to pay the following: Single Business Tax (SBT), state education tax, personal and real property taxes, and local income tax. Federal taxes, local bond obligations, school sinking funds, and special assessments will still be due. Forest product processing facilities in FPPRZs need to be current with all state and local taxes to be eligible for the benefits under the program.</p>
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<p><b>Renewable Energy Renaissance Zone (RERZ)</b></p>	<p>RERZs were created to promote renewable energy operations in Michigan. RERZs must contain the company’s renewable energy facility, but it may be located anywhere in Michigan.</p> <p>Eligible facilities include those that create energy, fuels, or chemicals directly from the wind, sun, trees, grasses, biosolids, algae, agricultural commodities, processed products from agricultural commodities, or residues from agricultural processes, wood or forest processes, food production and processing, or the paper products industry. The proposed wood pellet plant qualifies under this eligibility standard by creating energy directly from trees.</p> <p>If granted this renaissance zone, the facility would not have to pay state education taxes, personal and real property taxes, and local income taxes. Federal taxes, local bond obligations, school sinking funds, and special assessments would still be required.</p>
<p><b>Personal Property Tax Relief in Distressed Communities</b></p>	<p>This allows distressed communities (defined under the MI State Housing Development Authority Act) and all county seats (defined under the Neighborhood Enterprise Zone Act) to decrease all new personal property taxes in certain geographic areas to increase economic development. Cities, villages, and townships in these distressed areas and all county seats are eligible. Carp Lake, White Pine’s township, falls into this category. Manufacturing, mining, research and development, wholesale trade, and office operations are all eligible projects. Retail businesses and casinos are not eligible.</p> <p>Eligible local areas may exempt new personal property in an industrial development district, a renaissance zone, an enterprise zone, a brownfield redevelopment zone, an empowerment zone, a tax increment financing district, a local development financing district, or a downtown development district. Length of abatement will be negotiated between the local community and the business, and the law does not have a maximum or minimum amount of years.</p>
<p><b>Industrial Property Tax Abatement</b></p>	<p>This provides incentives for MI manufacturers to build new plants, expand existing plants, renovate aging plants, or add new machinery and equipment. High-technology operations are also eligible. A written request must be sent to establish the district for the project. The request must be sent to the project area’s legislative body.</p> <p>Carp Lake Township, which contains White Pine, can grant tax abatements for both real property and personal property. A PA 198 provides approximately a 50 percent reduction in property liability for real property. A PA 328 provides 100 percent reduction in real personal property invested during the life of the zone. The tax abatement can be awarded for a period up to 12 years.</p> <p>Industrial plants that are eligible are those that mainly manufacture or process goods or materials by physical or chemical change. Offices, engineering, research and development, buildings, building improvements, machinery, equipment, furniture, fixtures, warehousing or parts distribution are also eligible for the tax exemption. Any buildings and/or equipment that existed prior to construction of a new facility are not exempt. Any structure(s) or equipment added after the completion of a project is fully taxable. Land is still taxable.</p>

## DISTRIBUTION COSTS

The goal will be to sell all products at the plant door with all transportation costs being born by the purchaser. However, PPP will have trucking and rail option identified with contact information for any interested purchasers.

## OPERATING COSTS

### RAW MATERIALS

Raw materials are a major cost in the pellet process. The average raw material cost used for PPP in this plan is \$35 per ton. This wood is used as the raw material input. To manufacture 60,000 tons of pellets requires approximately 120,000 tons of wood.

When converting green (wet) tons of wood to arrive at the final product, i.e. pellets, we used a ratio of 2 tons of green wood residues, to a yield of one ton of pellets. This assumes an average input moisture content of approximately 45%, resulting in a 5% to 8% pellet moisture content output. Another 12,000 tons of wood is used as fuel to heat the dryer.

### DIRECT LABOR

There will be seven (7) or more people dedicated to the pellet facility per shift, plus a full time maintenance person, resulting in twenty-two (22) full-time direct labor employees. Bagging of the pellets will be an automated process ending with a robotic device to pack the pallets. The average salary and benefits is \$30,800.

### FEEDSTOCK PROCUREMENT FEES, ELECTRICITY, AND RENTALS

#### FEEDSTOCK PROCUREMENT

Feedstock procurement costs have been figured into the administrative costs.

#### ELECTRICITY COSTS

The electricity used to power the pellet facility will be purchased from the local utility company. We anticipate using approximately 9,207,271 raw kWh to power the facility at full production. The price per kWh is expected to be \$0.09229.

### TRANSPORTATION COSTS

Sold at the plant door, contract truckers will be used with the trucking price or rail car price being the responsibility of the purchaser.

### SUPPLIES (CONSUMABLE)

This includes the bags (\$0.25 per bag), pallet caps (\$2.50 per pallet) and the pallets (\$7.50 per pallet), which is a total cost of approximately \$22.50 to package a ton of pellets.

### PARTS AND MAINTENANCE

#### DIES AND ROLLERS

Annual cost at full production will be approximately \$210,000/yr.

#### MAINTENANCE

The pellet plant will require constant maintenance and will include at least one full-time maintenance worker, an on-call electrician, and a plant machine shop.

### EQUIPMENT REPLACEMENT

A list of all parts and when they were last replaced will be kept in the plant manager's office. An inventory of frequently replaced parts will be kept on hand.

### INSURANCE

Insurance covers workers compensation, property, umbrella, and general liability. Proper insurance is important as fires in pellet plants can happen and fires in the dryers are common. The site will have fire suppression equipment and sensors will be installed in critical areas to detect any fires. The annual cost of these insurance overages, at full production, is \$166,500.

## FINANCIAL STATEMENTS

### INCOME

Detailed, monthly information regarding the financial statements can be found in Appendix X, but here is the general, annual overview of the balance sheet, income statement, and cash flows statement.

### PORCUPINE PELLETT PLANT BALANCE SHEET | DECEMBER 31

	2014	2015	2016	2017	2018	2019
<b>CONSTRUCTION</b>						
<i>Assets</i>						
<i>Current Assets</i>						
Cash	1,448,726	463,560	232,193	757,497	1,308,378	1,900,559
Accounts Receivable	0	844,382	1,230,000	1,567,500	1,597,500	1,627,500
Inventory (wood)						
Raw Material	288,750	181,390	241,530	242,142	241,637	241,138
Work in process	0	145,093	193,782	190,354	191,955	193,568
Finished Goods	0	171,003	229,152	225,986	228,554	231,211
Supplies	60,425	25,905	35,370	35,629	36,621	37,643
<b>TOTAL CURRENT ASSETS</b>	<b>1,797,901</b>	<b>1,831,333</b>	<b>2,162,027</b>	<b>3,019,108</b>	<b>3,604,645</b>	<b>4,231,619</b>
<i>Property, Plant, &amp; Equipment</i>						
Land	20,000	20,000	20,000	20,000	20,000	20,000
Building	810,141	810,141	810,141	810,141	810,141	810,141
Equipment	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052
Startup costs	242,906	242,906	242,906	242,906	242,906	242,906
Less: Accumulated depreciation	0	(343,646)	(687,292)	(1,030,938)	(1,374,584)	(1,718,230)
<b>NET CAPITALIZED COSTS</b>	<b>4,501,099</b>	<b>4,157,453</b>	<b>3,813,807</b>	<b>3,470,161</b>	<b>3,126,515</b>	<b>2,782,869</b>
<b>TOTAL ASSETS</b>	<b>6,299,000</b>	<b>5,988,786</b>	<b>5,975,834</b>	<b>6,489,269</b>	<b>6,731,160</b>	<b>7,014,488</b>
<i>Liabilities and Owner's Equity</i>						
<i>Current Liabilities</i>						
Accounts payable and accrued expenses	0	407,751	632,465	749,252	760,620	771,447
Line of credit	0	0	0	0	0	0
Current portion of long-term debt	212,044	223,284	236,600	249,946	264,045	278,373
<b>TOTAL CURRENT LIABILITIES</b>	<b>212,044</b>	<b>631,035</b>	<b>869,065</b>	<b>999,198</b>	<b>1,024,665</b>	<b>1,049,820</b>
<i>Long-Term Debt</i>						
Notes payable	4,799,000	4,586,956	4,363,672	4,127,072	3,877,126	3,613,081
Less: current portion of long-term debt	(212,044)	(223,284)	(236,600)	(249,946)	(264,045)	(278,373)
<b>TOTAL LONG TERM DEBT</b>	<b>4,586,956</b>	<b>4,363,672</b>	<b>4,127,072</b>	<b>3,877,126</b>	<b>3,613,081</b>	<b>3,334,708</b>
<i>Owners' Equity</i>						
Owner's equity	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Retained earnings	0	(505,921)	(520,303)	112,945	593,414	1,129,960
<b>TOTAL OWNERS' EQUITY</b>	<b>1,500,000</b>	<b>994,079</b>	<b>979,697</b>	<b>1,612,945</b>	<b>2,093,414</b>	<b>2,629,960</b>
<b>TOTAL LIABILITIES AND OWNERS' EQUITY</b>	<b>6,299,000</b>	<b>5,988,786</b>	<b>5,975,834</b>	<b>6,489,269</b>	<b>6,731,160</b>	<b>7,014,488</b>



**PORCUPINE PELLETT PLANT INCOME STATEMENT | FOR PERIOD ENDING DECEMBER 31**

	2015	2016	2017	2018	2019	
<i>Gross Sales</i>						
Pellet revenue	\$ 5,010,000	\$ 8,200,000	\$ 10,450,000	\$ 10,650,000	\$ 10,850,000	
<b>Gross Sales from Operations</b>	<b>\$ 5,010,000</b>	<b>\$ 8,200,000</b>	<b>\$ 10,450,000</b>	<b>\$ 10,650,000</b>	<b>\$ 10,850,000</b>	
<i>Cost of Sales</i>						
Feedstock	\$ 2,100,000	\$ 3,360,000	\$ 4,200,000	\$ 4,200,000	\$ 4,200,000	
Dryer fuel	210,000	350,000	420,000	420,000	420,000	
Direct labor salary & benefits	432,740	691,350	738,000	756,450	775,361	2.5% in final 2 years
Feedstock procurement, electricity, services, & rentals	952,870	1,551,791	1,905,793	1,962,967	2,021,856	3% in final 2 years
Supplies expense	555,000	920,000	1,150,000	1,184,500	1,220,035	3% in final 2 years
Parts & maintenance	104,800	166,600	209,600	215,888	222,365	3% in final 2 years
<b>Total Cost of Sales</b>	<b>\$ 4,355,410</b>	<b>\$ 7,039,741</b>	<b>\$ 8,623,393</b>	<b>\$ 8,739,805</b>	<b>\$ 8,859,617</b>	
<b>Gross Profit</b>	<b>\$ 654,590</b>	<b>\$ 1,160,259</b>	<b>\$ 1,826,607</b>	<b>\$ 1,910,195</b>	<b>\$ 1,990,383</b>	
<i>Administrative Costs</i>						
Administrative salary & benefits	\$ 313,400	\$ 313,400	\$ 313,400	\$ 321,235	\$ 329,266	2.5% in final 2 years
Depreciation - equipment	343,646	343,646	343,646	343,646	343,646	
Insurance	166,500	166,500	166,500	166,500	166,500	
Real estate taxes	20,000	20,500	21,012	21,538	22,076	2.5% per year
Other professional fees	50,000	60,000	60,000	61,800	63,654	3% in final 2 years
<b>Total Administrative Costs</b>	<b>\$ 893,546</b>	<b>\$ 904,046</b>	<b>\$ 904,558</b>	<b>\$ 914,719</b>	<b>\$ 925,142</b>	
<b>EARNINGS BEFORE INTEREST AND TAXES</b>	<b>\$ (238,956)</b>	<b>\$ 256,213</b>	<b>\$ 922,050</b>	<b>\$ 995,476</b>	<b>\$ 1,065,241</b>	
Interest	266,965	270,595	257,402	229,507	207,494	
<b>EARNINGS BEFORE TAXES</b>	<b>(505,921)</b>	<b>(14,382)</b>	<b>664,648</b>	<b>765,969</b>	<b>857,747</b>	
Income taxes	0	0	31,400	285,500	321,200	Fed and Mich
<b>NET INCOME</b>	<b>\$ (505,921)</b>	<b>\$ (14,382)</b>	<b>\$ 633,248</b>	<b>\$ 480,469</b>	<b>\$ 536,547</b>	



**PORCUPINE PELLET PLANT CASH FLOW STATEMENT | FOR PERIOD ENDING DECEMBER 31**

	2014	2015	2016	2017	2018	2019
<b>Net Income</b>	0	(505,921)	(14,382)	633,248	480,469	536,547
<i>Cash Flows from Operating Activities</i>						
Depreciation - equipment	0	343,646	343,646	343,646	343,646	343,646
Accounts receivable	0	(844,382)	(385,618)	(337,500)	(30,000)	(30,000)
Inventories	(349,175)	(174,216)	(176,443)	5,724	(4,657)	(4,793)
Accounts payable and accrued expenses	0	407,751	224,714	116,787	11,368	10,827
<b>Net Cash from Operating Activities</b>	<b>(349,175)</b>	<b>(773,122)</b>	<b>(8,083)</b>	<b>761,905</b>	<b>800,826</b>	<b>856,227</b>
<i>Cash Flows from Financing Activities</i>						
Capital purchases	(4,501,099)	0	0	0	0	0
Loan proceeds	4,799,000	0	0	0	0	0
Line of credit draws	0	500,000	1,110,000	1,200,000	640,000	110,000
Line of credit repayments	0	(500,000)	(1,110,000)	(1,200,000)	(640,000)	(110,000)
Principal payments on debt	0	(212,044)	(223,284)	(236,600)	(249,946)	(264,045)
<b>Net Cash from Financing Activities</b>	<b>297,901</b>	<b>(212,044)</b>	<b>(223,284)</b>	<b>(236,600)</b>	<b>(249,946)</b>	<b>(264,045)</b>
<i>Cash Flows from Investing Activities</i>						
Owners' contribution	1,500,000	0	0	0	0	0
<b>Change in Cash</b>	<b>1,448,726</b>	<b>(985,166)</b>	<b>(231,367)</b>	<b>525,305</b>	<b>550,880</b>	<b>592,182</b>
<b>Beginning Cash</b>	<b>0</b>	<b>1,448,726</b>	<b>463,560</b>	<b>232,193</b>	<b>757,497</b>	<b>1,308,378</b>
<b>Ending Cash</b>	<b>1,448,726</b>	<b>463,560</b>	<b>232,193</b>	<b>757,497</b>	<b>1,308,378</b>	<b>1,900,559</b>

## ASSUMPTIONS

### GROSS SALES

#### 1 | Pellet Revenues

	2015 (30,000 tons)	2016 (48,000 tons)	2017 (60,000 tons)	2018 (60,000 tons)	2019 (60,000 tons)
<b>Premium bagged:</b> \$170-\$186/ton	24,000 tons \$4,080,000	40,000 tons \$6,960,000	50,000 tons \$8,900,000	50,000 tons \$9,100,000	50,000 tons \$9,300,000
<b>Premium totes:</b> \$160/ton	3,000 tons \$480,000	4,000 tons \$640,000	5,000 tons \$800,000	5,000 tons \$800,000	5,000 tons \$800,000
<b>Industrial bulk:</b> \$150/ton	3,000 tons \$450,000	4,000 tons \$600,000	5,000 tons \$750,000	5,000 tons \$750,000	5,000 tons \$750,000
<b>Total</b>	<b>\$5,010,000</b>	<b>\$8,200,000</b>	<b>\$10,450,000</b>	<b>\$10,650,000</b>	<b>\$10,850,000</b>

### COST OF SALES

#### Table 2 | Feedstock & Fuel

	2015	2016	2017	2018	2019
Feedstock ratio to wood pellets manufactured (2 to 1 ratio)	31,200 tons x 2 62,400 tons	49,200 tons x 2 98,400 tons	60,000 tons x 2 120,000 tons	60,000 tons x 2 120,000 tons	60,000 tons x 2 120,000 tons
Feedstock needed for fuel/year	6,000 tons	10,000 tons	12,000 tons	12,000 tons	12,000 tons
Total wood	68,400 tons	108,400 tons	132,000 tons	132,000 tons	132,000 tons
Average price/ton of wood	\$35	\$35	\$35	\$35	\$35
<b>Total</b>	<b>\$2,394,000</b>	<b>\$3,794,000</b>	<b>\$4,620,000</b>	<b>\$4,620,000</b>	<b>\$4,620,000</b>

#### 3 | Direct Labor - salary and benefits

	2015	2016	2017	2018	2019
<b>General Labor</b>					
<b>Staff size</b>	<b>12</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>
Net salary (\$10-\$18 range)	\$26,000	\$28,000	\$30,000	\$30,000	\$30,000
Additional costs	10%	10%	10%	10%	10%
Gross salary (net salary x 1.1)	\$28,600	\$30,800	\$33,300	\$33,300	\$33,300
<b>Total (size x gross salary)</b>	<b>\$343,200</b>	<b>\$554,400</b>	<b>\$599,400</b>	<b>\$599,400</b>	<b>\$599,400</b>

	2015	2016	2017	2018	2019
<b>Shift Foreman</b>					
<b>Staff size</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
Net salary	\$40,700	\$41,500	\$42,000	\$42,000	\$42,000
Additional costs	10%	10%	10%	10%	10%
Gross salary (net salary x 1.1)	\$44,770	\$45,650	\$46,200	\$46,200	\$46,200
<b>Total foreman salaries</b>	<b>\$89,540</b>	<b>\$136,950</b>	<b>\$138,600</b>	<b>\$138,600</b>	<b>\$138,600</b>

<b>Total Direct Labor</b>	<b>\$432,740</b>	<b>\$691,350</b>	<b>\$738,000</b>	<b>\$738,000</b>	<b>\$738,000</b>
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#### 4 | Feedstock Procurement, Electricity & Operating Costs

	2015	2016	2017	2018	2019
kWhs price	\$424,870	\$703,791	\$849,739	\$849,739	\$849,739
Equipment operation	\$528,000	\$848,000	\$1,056,000	\$1,056,000	\$1,056,000
<b>Total</b>	<b>\$952,870</b>	<b>\$1,551,791</b>	<b>\$1,905,793</b>	<b>\$1,905,793</b>	<b>\$1,905,793</b>

**Electricity estimated to be used to operate wood pellet mill**

2015:	4,603,631 kWhs x \$0.09229/kWh	<b>\$424,870</b>
2016:	7,625,866 kWhs x \$0.09229/kWh	<b>\$703,791</b>
2017 - 2019:	9,207,271 kWhs x \$0.09229/kWh	<b>\$849,739/year</b>

**Estimated costs to operate debarker, grinder, and grapple (feeding) equipment per ton = \$8.00**

**Total wood (per Assumption 2 above):**

2015:	66,000
2016:	106,000
2017 - 2019:	132,000/year

**Cost to operate equipment:**

2015:	\$8.00/ton x 66,000 tons	<b>\$528,000</b>
2016:	\$8.00/ton x 106,000 tons	<b>\$848,000</b>
2017 - 2019:	\$8.00/ton x 132,000 tons	<b>\$1,056,000/year</b>

**5 | Supplies (50,000 tons in 40-lb bags, 5,000 tons in one ton totes, 5,000 tons bulk)**

	2015	2016	2017	2018	2019
Pallets	\$180,000	\$300,000	\$375,000	\$375,000	\$375,000
Plastic pellet bags	\$300,000	\$500,000	\$625,000	\$625,000	\$625,000
One-ton totes	\$15,000	\$20,000	\$25,000	\$25,000	\$25,000
Hooders	\$60,000	\$100,000	\$125,000	\$125,000	\$125,000
<b>Total</b>	<b>\$555,000</b>	<b>\$920,000</b>	<b>\$1,150,000</b>	<b>\$1,150,000</b>	<b>\$1,150,000</b>

**Year 2015:**

Pallets required to house bags of pellets for one year	=	24,000
Price per pallet	=	\$7.50
24,000 pallets x \$7.50	=	<b>\$180,000</b>
Plastic pellet bags for one year	=	1,200,000*
Price per plastic bag	=	\$0.25
Price per bag \$0.25 x 1,200,000	=	<b>\$300,000</b>
One-ton totes: \$5.00/bag x 3,000 totes	=	<b>\$15,000</b>
Hooder cost per pallet	=	\$2.50
Pallets required to house bags of pellets	=	7,738
\$2.50 Hooder per pallet x 24,000 (# of pallets per year)	=	<b>\$60,000</b>
* (2,000 lbs. per ton @ 50,000 tons residential bagged per year)/ 40-lb bags		

**Year 2016:**

Pallets required to house bags of pellets for one year	=	40,000
Price per pallet	=	\$7.50
40,000 pallets x \$7.50	=	<b>\$300,000</b>
Plastic pellet bags for one year	=	2,000,000*
Price per plastic bag	=	\$0.25
Price per bag \$0.25 x 2,000,000	=	<b>\$500,000</b>
One-ton totes: \$5.00/bag x 4,000 totes	=	<b>\$20,000</b>
Hooder cost per pallet	=	\$2.50
Pallets required to house bags of pellets	=	7,738
\$2.50 Hooder per pallet * 40,000 (# of pallets per year)	=	<b>\$100,000</b>
* (2,000 lbs. per ton @ 50,000 tons residential bagged per year)/ 40-lb bags		

**Years 2017 - 2019:**

Pallets required to house bags of pellets for one year	=	50,000
Price per pallet	=	\$7.50
50,000 pallets x \$7.50	=	<b>\$375,000 per year</b>
Plastic pellet bags for one year	=	2,500,000*
Price per plastic bag	=	\$0.25
Price per bag \$0.25 x 2,500,000	=	<b>\$625,000 per year</b>
One-ton totes: \$5.00/bag x 5,000 totes	=	<b>\$25,000 per year</b>
Hooder cost per pallet	=	\$2.50
# of pallets required to house bags of pellets	=	7,738
\$2.50 Hooder per pallet * 50,000 (# of pallets per year)	=	<b>\$125,000 per year</b>
*(2,000 lbs. per ton @ 50,000 tons residential bagged per year)/ 40-lb bags		

**6 | Parts & Maintenance (annual # of dies and rollers used per year)**

	2015	2016	2017	2018	2019
Die costs	\$40,000	\$64,000	\$80,000	\$80,000	\$80,000
Roller costs	\$64,800	\$102,600	\$129,600	\$129,600	\$129,600
<b>Total</b>	<b>\$104,800</b>	<b>\$166,600</b>	<b>\$209,600</b>	<b>\$209,600</b>	<b>\$209,600</b>

	Year 2015	Year 2016	Years 2017-2019
Wood pellets manufactured requiring die change	= 3,000	= 3,000	= 3,000
Dies per pellet line	= 1	= 1	= 1
Pellet lines	= 3	= 3	= 3
Dies required per year	= 10	= 16	= 20 (rounded)
Cost for a new die	= \$4,000	= \$4,000	= \$4,000
<b>Annual cost for dies:</b>	<b>= \$40,000</b>	<b>= \$64,000</b>	<b>= \$80,000</b>
Wood pellets manufactured requiring roller change	= 1,250	= 1,250	= 1,250
Rollers per pellet line	= 2	= 2	= 2
Pellet lines	= 3	= 3	= 3
Rollers for wood pellet mill	= 6	= 4	= 64
Rollers required per year	= 24	= 38	= 48 (rounded)
Cost for a new roller	= \$2,700	= \$2,700	= \$2,700
<b>Annual cost for roller:</b>	<b>= \$64,800</b>	<b>= \$102,600</b>	<b>= \$129,600</b>

**ADMINISTRATIVE COSTS**

**7 | Administrative Salary (guaranty payment) & Benefits**

	2015	2016	2017	2018	2019
President	\$75,000	\$75,000	\$75,000	\$76,897	\$78,797
Plant Manager (1) <i>Industrial Production Manager</i>	\$69,700	\$69,700	\$69,700	\$71,463	\$73,229
Office Manager (1) <i>Administrative Service Manager</i>	\$55,000	\$55,000	\$55,000	\$56,391	\$57,784
Clerical (1) <i>Office Clerk (full-time)</i>	\$25,000	\$25,000	\$25,000	\$25,632	\$26,266
Clerical (1) <i>Office Clerk (part-time)</i>	\$10,000	\$10,000	\$10,000	\$10,252	\$10,506
Marketing Manager	\$35,000	\$35,000	\$35,000	\$35,885	\$36,772
Average benefits * Plant share of taxes (FICA, unemployment, etc.)	\$43,700	\$43,700	\$43,700	\$44,805	\$45,912
<b>Total</b>	<b>\$313,400</b>	<b>\$313,400</b>	<b>\$313,400</b>	<b>\$321,325</b>	<b>\$329,266</b>

Above data from the Michigan Labor Market Information, Occupational Employment Survey for region.

## 8 | Insurance

	2015	2016	2017	2018	2019
Workers compensation premium	\$65,000	\$65,000	\$65,000	\$65,000	\$65,000
Property insurance*	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
General liability**	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
<b>Total</b>	<b>\$166,500</b>	<b>\$166,500</b>	<b>\$166,500</b>	<b>\$166,500</b>	<b>\$166,500</b>

\*Based on property values of \$18 million (includes inventory of wood and finished product)

\*\* Based on \$9 million in annual sales

## 9 | Real Estate Taxes

\$20,000 every year

## 10 | Other Professional Fees

	2015	2016	2017	2018	2019
<b>Estimated ongoing legal, accountant, network, security, bank, payroll, etc. fees</b>	\$50,000	\$60,000	\$60,000	\$61,800	\$63,654

## 11 | Depreciation

Estimated equipment costs are \$3,428,052 depreciation varies by specific

Estimated building costs are \$810,140, depreciated over 39 years

**Total Depreciation = \$343,646**

## 12 | Loan/Interest

<b>Loan Amount</b>	<b>\$4,799,000</b>
<i>Interest based on the loan amortization schedule over 15 years at 5.5 %</i>	<i>\$15,555 per year</i>
<b>Total Interest</b>	<b>\$264,430</b>

## CONCLUSION

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This plan was prepared taking into consideration all the steps and processes involved with making pellets from roundwood. This not only adds cost, but a number of raw material and process variables also makes production of a consistent/high quality pellet challenging. This, compounded with the fact that production of pellets from roundwood is in its infancy in the US, makes for a lack of available expertise at the management level. Wood pellet plants in this region that utilize roundwood have had quality control issues, making it difficult to compete with high-end pellets, such as the “Bear Mountain” brand. Any plant that could produce a product comparable to “Bear Mountain” would, in all likelihood, be able to sell all they could produce at a premium price. Of course, it would still take a couple of years to establish this reputation and become known, but such a plant should have no problem being profitable far beyond what is projected in this plan. This plan was made for what has been the standard in the industry, not the exception.

Also, if another wood industry plant is established in the area, another 5,000 tons or more of dry wood residue would be produced. A smaller-scale plant could be profitable because a majority of the equipment and processes associated with this plant could be eliminated.

Obtaining raw material from forest industry residues makes the most economic sense, because using this source eliminates processing costs associated with using raw forest products. However, poor lumber markets, the movement of many forest industry companies to foreign countries, and increased raw material competition has reduced the supply and increased the price of mill residue. This type of raw material will be capable of supplying only a small percentage (<10%) of total feedstock. Potential sources of residue feedstock can be found in Appendix V.

The next raw material option is bringing in chips from logging operations, which would be the preferred source for industrial pellets (<sup>3</sup>/<sub>8</sub>” and 3+ percent ash). Dirt content would have to be evaluated, especially with whole tree/pole length skidding operations. Currently, the industrial pellet market is very limited and should not be counted on. This could change if the price for industrial pellets in Europe increases by 25% or more, covering the cost of shipping to Europe.

Bringing in roundwood to be debarked and chipped at the plant would require the highest amount of processing, but if residential (premium) pellets are the primary product, this will initially be the only option. Concentrating on producing a high-quality premium pellet by using only a few species of softwood (pine and spruce) with a possible mix of a softer hardwood, such as aspen, will help differentiate PPP pellets from many other pellet brands. The pitch found in pine and spruce gives them a higher BTU content than hardwood pellets.

Currently, raw material availability will not be an issue; however, long-term sustainability of raw material supply cannot be assured due to other potential markets that may emerge. It is evident that many loggers struggle to find long-term sustainable markets for their wood products; therefore, a local company that pays fair prices on a timely basis with a consistent demand should be well-positioned to receive consistent supplies of raw materials.

The permitting process in Michigan is mandated by law to take no more than 180 days; however, this timeframe does not start until a complete application is submitted. DEQ personnel gave estimates ranging from 30 to 90 days, typically, to complete the process.

The location of markets and competition in these markets is possibly the biggest factor to consider. With five significant pellet plants in northern Wisconsin and one other residential pellet manufacturer in the Upper Peninsula at this time, the supply and production capacity in this region is substantial; however, only Great Lakes

Renewable Energy in Hayward, WI has concentrated on producing softwood pellets. Concentrating on this product would definitely give PPP the opportunity to get a substantial foothold in the softwood premium pellet market.

Trans-ocean markets (Europe and Asia) currently have little indication of being profitable in the next year; however, until a plant is actually operational and producing a consistent volume of pellets, it will be difficult to ascertain the exact potential of these markets. Additionally, the fluctuating valuation of the dollar and shipping costs make an accurate assessment of foreign market potential nearly impossible until you have a marketable supply of pellets.

All indications are that markets for premium ¾” pellets will continue to see growth as will the supply of these pellets. Producing a quality pellet while establishing a relationship with retail pellet dealers, pellet stove dealers, and wholesalers will help ensure a substantial portion of the market. Mild or harsh weather conditions can have a dramatic effect on this market.

While the industrial pellet markets are tremendous in Europe, it only accounts for 5% of the pellet production in North America. Industrial pellets can be used to heat commercial and public buildings and for the generation of electricity. The benefit of pellets versus traditional wood fuel sources is easier handling and storage plus a consistent moisture content. Government incentives for conversion to renewable energy systems and/or green energy credits could give an immediate boost to this market potential.

Another use for pellets is animal bedding. Animal bedding has the potential to be a significant year-round market, which can potentially help with cash flow concerns in the spring and summer months. Identifying sustainable markets and producing a quality product will be essential.

Grant opportunities such as the USDA Value-Added Grant, Department of Energy Grants, USDA Rural Development Renewable Energy Programs, Michigan Biomass Energy Program, Michigan Department of Energy, and the Michigan Community Development Block Grant Program are very positive for this plant. Many other financing options exist in addition to grants, such as the MEDC Capital Access Program, and the Small Business Administration Programs. In collaboration with grants and loans, the incentives for creating a wood pellet plant in White Pine include the Forest Products Processing Renaissance Zones, Renewable Energy Renaissance Zones, the Personal Property Tax Relief in Distressed Communities, and the Industrial Property Tax Abatement.

The two largest questions concerning the feasibility of this plant are markets and financing. Market demand will fluctuate with weather (severity of winter), increased use of pellets for heating, increased production with the pellet industry, foreign demand, and the emergence of new domestic markets (i.e. industrial pellet use and animal bedding). The bottom line on markets is that until pellets of a high quality are produced, there are no market guarantees. Financing can have almost as many variables as the market depending upon grants, government loans, investors, and financial institutions. It is recommended to keep options open on financial institutions as far into the process as possible.

A plant that is operational in 2015 will be positioned to take advantage of the growing and emerging markets if the owners/managers of the plant are willing to adapt production to take advantage of them. If production is centered on one product without addressing consumer preferences and changing markets, it is likely that the plant will suffer financially from market fluctuations. Inversely, a plant willing to adapt its production will likely maintain sustainable profit margins and demand for their products while avoiding rollercoaster markets associated with adhering to one specific product.

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# APPENDICES

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## APPENDIX I: RESOURCE ASSESSMENT

### WOOD SOURCES AND PROCUREMENT AREA DATA

Most of the wood will be procured from a specific radius of the project location. For the purposes of this assessment, White Pine, MI was considered as the plant location. County boundaries were used to increase accuracy and to take advantage of the availability of more in-depth data. This report looks at USFS Forest Inventory Analysis and other cited information for the following counties:

#### Michigan

- Baraga
- Dickinson
- Gogebic
- Houghton
- Iron
- Keweenaw
- Marquette
- Ontonagon

#### Wisconsin

- Ashland
- Iron
- Oneida
- Vilas

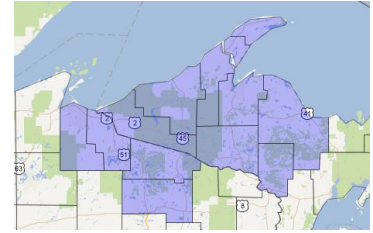


TABLE 1.1: ACRES OF SAMPLED NON-RESERVED FORESTLAND BY COUNTY AND OWNERSHIP<sup>9</sup>

County	ST	National Forest	Dept of Defense	Other Federal	State	Local (county, municipal, etc.)	Other non federal	Private	Totals
Baraga	MI	43,025	-	4,518	71,978	3,232	4,064	401,485	528,301
Dickinson	MI	-	-	-	172,402	8,236	-	202,055	382,693
Gogebic	MI	255,667	-	-	7,308	70,952	-	313,561	647,487
Houghton	MI	138,089	-	-	47,990	-	-	371,960	558,039
Iron	MI	166,931	-	-	76,568	-	-	443,498	686,997
Keweenaw	MI	-	-	-	4,004	-	-	192,285	196,289
Marquette	MI	11,840	5,264	-	249,785	9,769	-	707,129	983,787
Ontonagon	MI	271,480	-	-	28,750	5,834	-	385,675	691,739
Ashland	WI	163,430	-	-	15,127	42,476	-	196,103	417,136
Iron	WI	-	-	-	77,795	172,740	-	201,088	451,624
Oneida	WI	10,317	-	-	87,746	89,135	5,239	434,429	626,866
Vilas	WI	53,660	-	-	139,802	47,242	-	272,754	513,458
<b>Totals</b>		<b>1,114,439</b>	<b>5,264</b>	<b>4,518</b>	<b>979,255</b>	<b>449,616</b>	<b>9,303</b>	<b>4,122,022</b>	<b>6,684,416</b>

### REALISTIC PRICING OF AVAILABLE WOOD FUEL SOURCES

There will be the opportunity to determine availability of fuel from a wide variety of sources when the project moves to the procurement phase. For the purpose of this study, primary emphasis will be put on obtaining forest-based products due to it being the most readily available source of woody raw material.

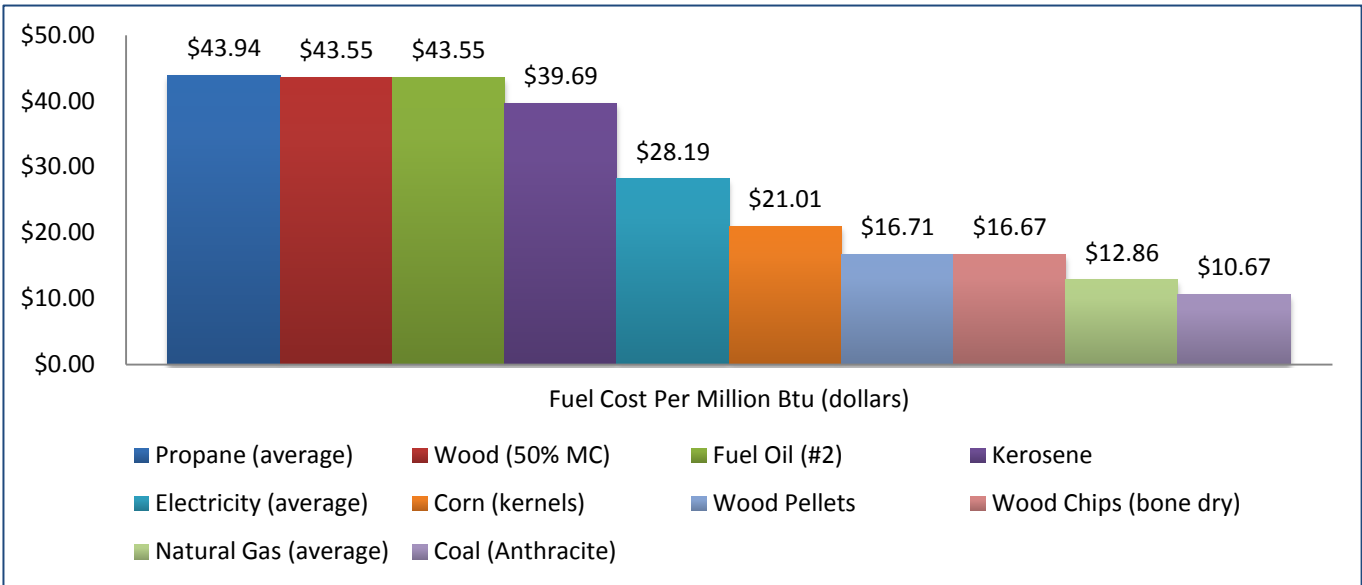
#### PRICING OF AVAILABLE BIOMASS FUEL | CURRENT PRICE STRUCTURE – DELIVERED TO PLANT

The following discusses the price range at which each potential raw material is available. Please note these prices are averages and vary depending upon mileage and, in the case of roundwood, certain species.

Type	Price/Ton
Roundwood (most species)	\$30-40
Biomass Chips	\$25-40
Residue from Forest Industry (sawdust, shavings, etc.)	\$30-50
Wood Waste (urban, right-of-way, site conversions, etc.)	\$25-35

<sup>9</sup> U.S. Department of Agriculture, Forest Service, North Central Research Station. Forest Inventory and Analysis National Program. 2011 Data. Counties of interest: Michigan: Baraga, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Marquette, and Ontonagon; Wisconsin: Ashland, Iron, Oneida, and Vilas.

## RESIDENTIAL FUEL COST COMPARISON PER MILLION BTU<sup>10</sup>



Fuel Type	Fuel Price Per Unit (dollars)	BTUs Per Unit <sup>7</sup>	Heating Appliance Type	Efficiency Rating Estimate <sup>C</sup>	Approx. Efficiency (%)	Fuel Cost Per Million Btu
Propane	\$2.85/ Gallon	71,900	Furnace or Boiler	78.0	78%	\$25.27
Wood <sup>B</sup>	\$200.00/Cord	5,740,000	Room Heater (Vented)	80	80% <sup>11</sup>	\$43.55
Fuel Oil (#2)	\$3.93/ Gallon	115,000	Furnace or Boiler	78.0	78%	\$36.51
Electricity	\$0.117 kW hr	3,340	Furnace or Boiler	98.0	98%	\$35.03
Wood Pellets <sup>12</sup>	\$215.00/Ton	13,600,000	Room Heater (Vented)	68.0	78%	\$16.71
Corn (kernels) <sup>B</sup>	\$200.00/Ton	14,000,000 <sup>6</sup>	Room Heater (Vented)	68.0	68%	\$21.01
Natural Gas <sup>A</sup>	\$1.01/Therm <sup>E</sup>	82,000	Furnace or Boiler	78.0	78%	\$5.25
Coal (Anthracite)	\$200.00/Ton	25,000,000 <sup>6</sup>	Furnace/Boiler/Stove	75.0	75%	\$10.67

- A. Natural gas is typically sold to residential customers in units of "therms," but may be sold in units of hundreds of cubic feet.
- B. The heat content for a cord of wood varies by tree species and is greatly affected by moisture content; using the USDA Fuel Calculator<sup>7</sup>, 50% moisture content wood is estimated to have 5,740,000 BTU per cord. The heat content of a unit (ton or bushel) of corn can also vary widely.
- C. The default values are the minimum efficiency standards set by the U.S. Department of Energy (DOE). Estimated "ratings" are provided for heating equipment for which there are no DOE standards.
- D. Air-Source Heat Pump Ratings: The actual heating efficiency and seasonal performance of a "conventional" air-source heat pump may vary significantly from its rated heating season performance factor (HSPF). Below is a procedure for determining an adjusted HSPF for your location for an air-source heat pump that uses only electric resistance heating as the auxiliary heat source. There are so-called "dual-fuel" or "hybrid" heat pump systems that are basically a heat pump integrated with a forced-air combustion appliance that uses natural gas, fuel oil, or propane. In general, these systems use the heat pump for heating until outside temperatures reach the low 40s/high 30s (°F), then switch to the combustion appliance for heating.
- E. One therm = 100,000 BTU, and is equivalent to about 97.752 cubic feet (or 0.978 ccf), when there are 1,023 BTU/cf. To convert prices in \$/Mcf (1,000 cubic feet) to \$/therm, divide the \$/Mcf price price by 10.23.

<sup>10</sup> Heating Fuel Cost Calculator. US Energy Information Agency. Last updated 11/15/2012. [www.eia.gov/neic/experts/heatcalc.xls](http://www.eia.gov/neic/experts/heatcalc.xls).

<sup>11</sup> USDA Forest Products Laboratory Fuel Value Calculator. <http://www.fpl.fs.fed.us/documnts/techline/fuel-value-calculator.pdf>

<sup>12</sup> Avg. pellet prices for Lake States Area (OH, IL, IN, WI, MI, IA) [http://www.hearth.com/talk/forums/wood-pellet-pricing-reports.29/?prefix\\_id=9](http://www.hearth.com/talk/forums/wood-pellet-pricing-reports.29/?prefix_id=9)

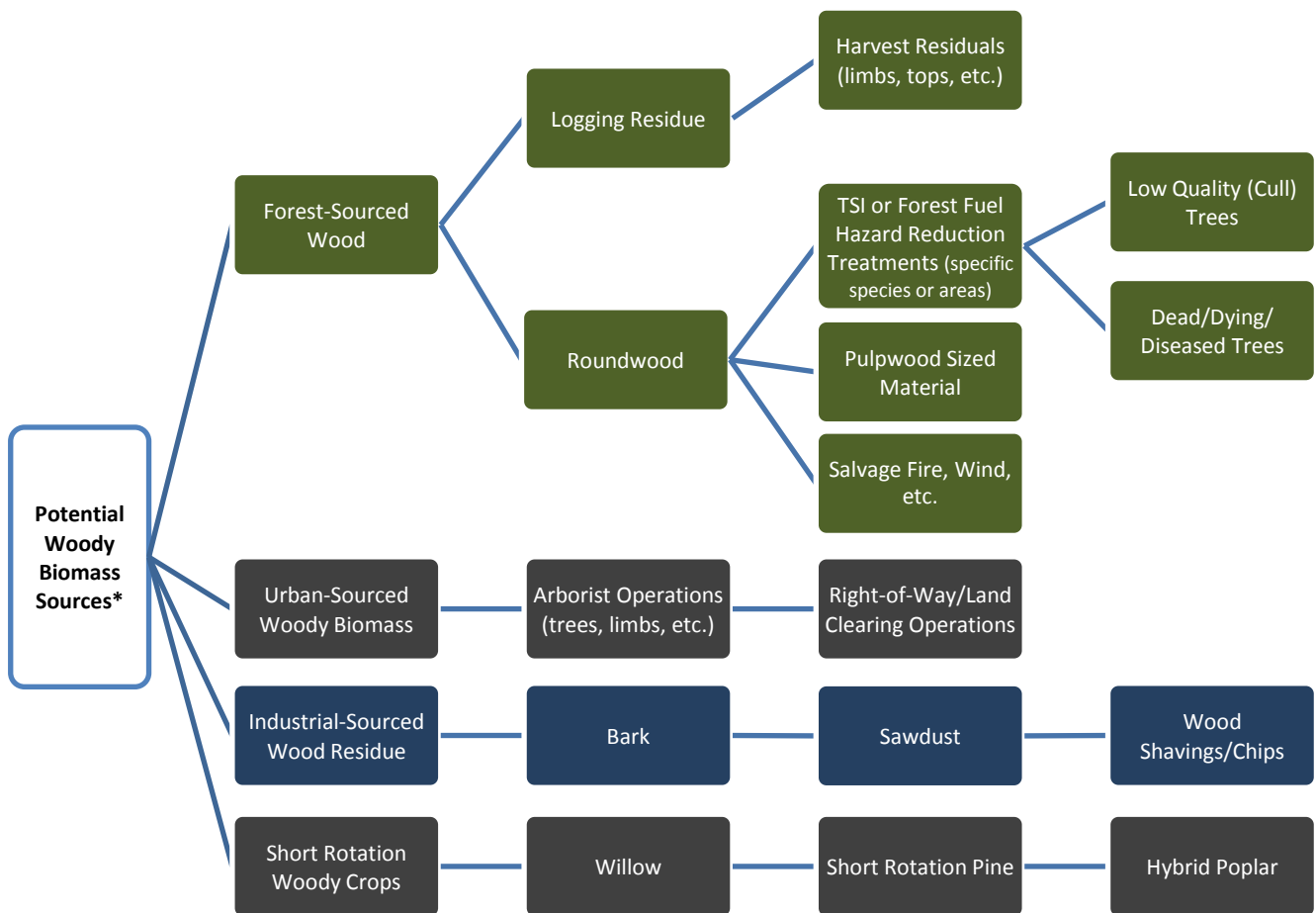
**FEEDSTOCK AVAILABILITY CONSTRAINTS**

When social, economical, ecological, technological, political, and other logistical constraints are applied to wood, the availability/sustainability of the supply is reduced considerably when compared to physical inventory alone.

Emphasis should be placed on the continued/enhanced health and vitality of the forests and their resources. It is highly recommended that state-specific forest-based woody biomass harvesting guidelines be followed as they take management of all resources into consideration.

To account for the above constraints, the assumptions of availability made herein are calculated using a percentage or ratio based on the above factors.

**FIGURE 2.1: POTENTIAL WOOD SOURCES**



\*Adapted from Kittler et al., 2010<sup>2</sup>

## POTENTIAL WOOD HARVEST VOLUMES AVAILABLE

The following reviews the 2011 forest resource availability from all ownerships<sup>13</sup> in the counties of interest using the USDA Forest Service Forest Inventory and Analysis National Program.

TABLE 3.1: MICHIGAN (BARAGA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, MARQUETTE, AND ONTONAGON COUNTY)

	Cubic Feet				Green Tons <sup>14</sup>			
	Gross Annual Growth*	Net Annual Removals	Net Annual Mortality*	Net Annual Growth*	Gross Annual Growth*	Net Annual Removals	Net Annual Mortality*	Net Annual Growth*
National Forest*	50,089,031	7,771,612	20,774,231	21,543,188	1,458,288	226,262	604,819	627,207
National Park Service	4,490,958	-	4,490,958	-	130,749	-	130,749	-
Dept. of Defense	205,789	-	173,141	32,648	5,991	-	5,041	951
Other Federal	228,760	-	-	228,760	6,660	-	-	6,660
State*	40,798,922	12,265,727	14,931,152	13,602,043	1,187,817	357,103	434,704	396,009
County, municipal, etc.	6,771,982	2,174,701	1,878,852	2,718,429	197,159	63,314	54,701	79,144
Other non federal	-	-	-	-	-	-	-	-
Private	205,668,708	75,784,142	47,422,047	82,462,519	5,987,823	2,206,374	1,380,642	2,400,808
<b>Total*</b>	<b>308,254,150</b>	<b>97,996,182</b>	<b>89,670,381</b>	<b>120,587,587</b>	<b>8,974,487</b>	<b>2,853,053</b>	<b>2,610,656</b>	<b>3,510,779</b>

\*Totals have been adjusted to reflect "reserved" acreage.

TABLE 3.2: WISCONSIN (ASHLAND, IRON, ONEIDA, AND VILAS COUNTY)

	Cubic Feet				Green Tons <sup>18</sup>			
	Gross Annual Growth*	Net Annual Removals	Net Annual Mortality*	Net Annual Growth*	Gross Annual Growth*	Net Annual Removals	Net Annual Mortality*	Net Annual Growth*
National Forest*	17,270,912	328,066	5,447,579	11,495,267	502,824	9,551	158,600	334,672
National Park Service	748,598	-	748,598	-	21,795	-	21,795	-
Dept. of Defense	-	-	-	-	-	-	-	-
Other Federal	-	-	-	-	-	-	-	-
State*	20,458,772	6,732,783	4,860,818	8,865,171	595,635	196,018	141,518	258,100
County, municipal, etc.	19,950,616	3,145,541	4,632,303	12,172,772	580,841	91,579	134,865	354,397
Other non federal	471,368	-	102,581	368,787	13,723	-	2,987	10,737
Private	73,637,435	20,683,816	17,152,937	35,800,682	2,143,875	602,187	499,389	1,042,298
<b>Total*</b>	<b>132,537,701</b>	<b>30,890,206</b>	<b>32,944,816</b>	<b>68,702,679</b>	<b>3,858,693</b>	<b>899,335</b>	<b>959,154</b>	<b>2,000,204</b>

\*Totals have been adjusted to reflect "reserved" acreage.

TABLE 3.3: TOTAL PROCUREMENT AREA (12-COUNTY AREA)

	Cubic Feet				Green Tons <sup>18</sup>			
	Gross Annual Growth*	Net Annual Removals	Net Annual Mortality*	Net Annual Growth*	Gross Annual Growth*	Net Annual Removals	Net Annual Mortality*	Net Annual Growth*
National Forest*	67,359,943	8,099,678	26,221,810	33,038,455	1,961,112	235,813	763,420	961,879
National Park Service	5,239,556	-	5,239,556	-	152,544	-	152,544	-
Dept. of Defense	205,789	-	173,141	32,648	5,991	-	5,041	951
Other Federal	228,760	-	-	228,760	6,660	-	-	6,660
State*	61,257,694	18,998,510	19,791,970	22,467,213	1,783,452	553,121	576,222	654,109
County, municipal, etc.	26,722,598	5,320,242	6,511,155	14,891,201	778,000	154,893	189,565	433,541
Other non federal	471,368	-	102,581	368,787	13,723	-	2,987	10,737
Private	279,306,143	96,467,958	64,574,984	118,263,201	8,131,698	2,808,561	1,880,031	3,443,106
<b>Total*</b>	<b>440,791,851</b>	<b>128,886,388</b>	<b>122,615,197</b>	<b>189,290,265</b>	<b>12,833,180</b>	<b>3,752,388</b>	<b>3,569,810</b>	<b>5,510,983</b>

\*Totals have been adjusted to reflect "reserved" acreage.

<sup>13</sup> U.S. Department of Agriculture, Forest Service, North Central Research Station. Forest Inventory and Analysis National Program. 2011 Data. Counties of interest: Michigan: Baraga, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Marquette, and Ontonagon; Wisconsin: Ashland, Iron, Oneida, and Vilas.

<sup>14</sup> Cubic feet was converted to green tons using 79 cu. ft. of solid wood per standard cord and 2.3 tons of wood per standard cord. These are averages used for the purpose of these conversions and are not meant to be absolute number.

## POTENTIAL LOGGING RESIDUE AVAILABLE

According to the most recent Michigan Timber Products Output and Use study (2006 data published in 2010)<sup>15</sup>:  
 “The Western Upper Peninsula Forest Inventory Unit had the greatest harvest intensity [in the state of Michigan] in 2006, with an average of 26 cubic feet of total wood removals per acre of forest land.”

According to the Michigan DNR Draft Regional State Forest Management Plan: Western Upper Peninsula (Alger, Baraga, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Marquette, and Ontonagon) – Executive Summary (October 2012), there are proposed [state] timber sales scheduled on approximately 118,256 acres over the next decade (or about 12,000 acres on average per year).

Using a ratio of 0.24 green tons of biomass per green ton other products removed, the following table was derived using USFS FIA removal volumes from 2011.

TABLE 4.1: GREEN TONS OF LOGGING RESIDUE GENERATED BY INDUSTRIAL ROUNDWOOD HARVESTING ON ALL OWNERSHIPS<sup>16</sup> (2011) - COUNTIES OF INTEREST

	Michigan	Wisconsin	Total
<b>National Forest</b>	54,303	2,292	56,595
<b>National Park Service</b>	-	-	-
<b>Dept. of Defense</b>	-	-	-
<b>Other Federal</b>	-	-	-
<b>State</b>	85,705	47,044	132,749
<b>County, municipal, etc.</b>	15,195	21,979	37,174
<b>Other non federal</b>	-	-	-
<b>Private</b>	529,530	144,525	674,055
<b>Total</b>	<b>684,733</b>	<b>215,840</b>	<b>900,573</b>

## OTHER POTENTIAL RESIDUE SOURCES

### VOLUME OF INDUSTRIAL WOOD RESIDUE<sup>17</sup> (GREEN TONS) – STATEWIDE

In 2006, Michigan’s primary wood-using industries generated 3 million green tons of wood residue (coarse and fine residues) and bark residue. Though there is a significant volume generated, nearly 46% of the mill residues generated were used for industrial fuelwood; pulp and composite product mills consumed 32% of the mill residues; miscellaneous uses (i.e livestock bedding, mulch, and small dimension lumber, etc.) consumed 19%; and residential fuelwood consumed 2%. This means that only 1% (roughly 30,000 green tons) of the mill residues generated in 2006 by Michigan’s primary industry went unused.

→ Seventy-three percent of the industrial roundwood processed by Michigan’s primary wood-using mills were hardwood species. Hard and soft maples, combined, accounted for 32% of the total volume processed. Other important species processed were aspen, balsam poplar, red pine, jack pine, and red oak.

<sup>15</sup> United States Department of Agriculture Forest Service Northern Research Station. Resource Bulletin NRS-42. “2006 Michigan Timber Industry: An Assessment of Timber Product Output and Use”. Ronald J. Piva and Anthony K. Weatherspoon. Published 2010.

<sup>16</sup> Data extrapolated from U.S. Department of Agriculture, Forest Service, North Central Research Station. Forest Inventory and Analysis National Program. 2011.

<sup>17</sup> United States Department of Agriculture Forest Service Northern Research Station. Resource Bulletin NRS-42. “2006 Michigan Timber Industry: An Assessment of Timber Product Output and Use”. Ronald J. Piva and Anthony K. Weatherspoon. Published 2010.

**VOLUME REALISTICALLY/ECONOMICALLY AVAILABLE**

**LOGGING RESIDUES**

The following table shows the volume of recoverable logging residue based on procuring certain percentages of available logging residue. These percentages allow for competition and lack of biomass removal for various reasons. Totals below were developed using a ratio of .24 green tons of biomass per green ton of other products removed annually derived using USFS FIA removal volumes from 2011 (See Table 4.1).

TABLE 6.1: LOGGING RESIDUE AVAILABILITY

State (Specified Counties)	Green Tons		
	Total Logging Res.	25% Recovered	50% Recovered
Michigan	684,733	171,183	342,366
Wisconsin	215,840	53,960	107,920
<b>Total</b>	<b>900,573</b>	<b>225,143</b>	<b>450,286</b>

In addition to the residue aforementioned, other sources of woody material may include primary and secondary forest industry companies, untreated waste (pallets), urban or R.O.W. tree removals/trimmings, and landfill brush dumps. This also does not include wood available from dead trees caused by weather events, insects, or disease as these volumes cannot be planned for or counted on in a specific year. In some years, it could account for a significant percentage of the woody biomass used at a woody biomass using facility. Additionally, wood available from other non-harvest activities (site preparation for planting, plantation release, invasive tree/shrub control, etc.) is not included in this figure. Once a site is chosen and fuel procurement planning begins, these additional sources would need to be contacted for potential material, but many of these sources already have markets for their residue and, though it is assumed a percentage of the material could come from these sources, logging residue would most likely be the primary fuel source.

**TIMBER STAND IMPROVEMENT/SALVAGE**

The following table shows the volume of recoverable forest mortality for timber stand improvement/salvage. Totals were developed using a salvage ratio of 20% per green ton of annual forest mortality derived using USFS FIA removal

volumes from 2011 based on procuring certain percentages (See Tables 3.1-3.4).

TABLE 6.2: TIMBER STAND IMPROVEMENT/SALVAGE

State (Specified Counties)	Green Tons		
	Total Mortality	25% Recovered	50% Recovered
Michigan	522,131	130,533	261,066
Wisconsin	191,830	47,957	95,915
<b>Total</b>	<b>713,961</b>	<b>178,490</b>	<b>356,981</b>

**BIOMASS HARVESTING (GROWING STOCK)**

The following table shows the volume of biomass available through dedicated biomass harvesting. Totals were developed using a harvest ratio of both 10% and 20% per green ton of net annual forest growth derived using USFS FIA growing stock volumes from 2011 based on procuring certain percentages (See Tables 3.1-3.4).

TABLE 6.3: BIOMASS HARVESTING – GROWING STOCK

State (Specified Counties)	Total Net Ann. Growing Stock	Green Tons	
		Total Growing Stock	
		10%	20%
Michigan	702,156	70,216	140,431
Wisconsin	400,041	40,004	80,008
<b>Total</b>	<b>1,102,197</b>	<b>110,220</b>	<b>220,439</b>

**VARIABLES**

Logging residue extraction on all properties can have a number of variables that affect it on-site:

- Soil Type
- Topography
- Soil Conditions (wet, dry, frozen)
- Long Skid Distance
- Other Uses for Tops (firewood, trail armoring)
- Company Not Equipped for Biomass Harvesting
- Landowner Goals for the Property

Off-site variables that can affect biomass extraction:

- Price Paid by Receiving Plant
- Distance to Plant
- Availability/Ease of Use of Incentive Programs
- Other Markets for Product
- Biomass Harvesting Guidelines
- Buyer Specifications (i.e. species, form, moisture content, etc.)
- Competition Among Buyers and Buyer Needs

## APPENDIX II: RAW MATERIAL OPTIONS

There are typically two different options when developing a wood pellet plant: build a plant based on using green wood biomass from trees/vegetation or build one based on using dry residue materials from wood processing operations.

**Regardless of raw material used, in order to be a successful wood pellet business, the plant must be able to produce a consistent product with predictable moisture and ash content.**

### Forest-Based Raw Material

If pellets are made from roundwood or other woody biomass sources, extra steps are involved. In addition to the hammer mill used to form the pellets, using roundwood often requires the following additional processes: debarking, chipping, and drying. To dry roundwood or other woody biomass sources, large drying devices using enormous heat flow sources are typically required. A good rule of thumb is that it takes about 2.2 tons of green biomass to make 1 ton of finished wood pellet product (including heating fuel to dry raw material) due to the high moisture content of green biomass.

Whole tree chips would be a feasible option as a wood resource for pellets; however, their use would be contingent on the following factors:

1. Size – the diameter of the tree is a factor due to other potential uses and bark content.
2. Species – bark thickness varies by species and can greatly affect the percentage of bark.
3. Thinning – trees taken from a thinning usually have less branch and crown development and consequently have less bark than those trees removed in other types of timber harvesting.
4. Cost – utilizing the whole tree will have higher raw product cost.

Tops could certainly be utilized for commercial pellets due to ash production being a more addressable issue in that setting. Top use in the residential market, due to stricter industry standards, would be contingent upon the following factors:

1. Species – bark percentages vary between different tree species.
2. Needle/leaf content – reduces BTUs and increases ash content.
3. Large-end diameter top – 5" diameter top will have a lower percentage of bark and more fiber than a 2" diameter top.

### Secondary Industry-Based Raw Material

Use of dry residue materials such as sawdust, shavings, and chips from the secondary wood industry may need to be further processed by a hammermill or similar equipment, but further drying is typically not necessary.

### Forming the Wood Pellets

Once the product is dried to specifications and reduced to the desired size, steam conditioning is applied. Binding agents may also be added. These steps are taken to ensure that the pellets are durable and breakage during transport is reduced. During steam conditioning, the lignin in the wood is softened. This lignin (a chemical compound from the secondary cell walls of the wood) binds the cellulose together and allows the product to hold its pellet form. Additives may be used to improve the pelletizing process.

### Finished Product

When these processes are finished, the product is forced through dies and cut to length. Once cut, these hot pellets are placed in a counter flow to allow the lignin to reset, harden, and form the pellet unit. When cooled, the pellets can be bagged to manufacturer/buyer specifications and shipped.

**APPENDIX III: PFI'S FUEL GRADE REQUIREMENTS FOR RESIDENTIAL AND COMMERCIAL WOOD PELLETS**

	Residential/Commercial Densified Fuel Standards See Notes 1 - 3		
Fuel Property	PFI Premium	PFI Standard	PFI Utility
<b>Normative Information - Mandatory</b>			
Bulk Density, lb./cubic foot	40.0 - 46.0	38.0 - 46.0	38.0 - 46.0
Diameter, inches	0.230 - 0.285	0.230 - 0.285	0.230 - 0.285
Diameter, mm	5.84 - 7.25	5.84 - 7.25	5.84 - 7.25
Pellet Durability Index	≥ 96.5	≥ 95.0	≥ 95.0
Fines, % (at the mill gate)	≤ 0.50	≤ 1.0	≤ 1.0
Inorganic Ash, %	≤ 1.0	≤ 2.0	≤ 6.0
Length, % greater than 1.50 inches	≤ 1.0	≤ 1.0	≤ 1.0
Moisture, %	≤ 8.0	≤ 10.0	≤ 10.0
Chloride, ppm	≤ 300	≤ 300	≤ 300
Heating Value	NA	NA	NA
<b>Informative Only - Not Mandatory</b>			
Ash Fusion	NA	NA	NA



**APPENDIX IV: WESTERN UPPER MICHIGAN HOUSING AND BUSINESS INFORMATION**

**Keweenaw County**

Housing Units, 2011 .....2,465  
Households, 2006-2010.....957  
Private Nonfarm Establishments.....59

**Baraga County**

Housing Units, 2011 .....5,315  
Households, 2006-2010.....3,336  
Private Nonfarm Establishments.....209

**Gogebic County**

Housing Units, 2011 .....10,745  
Households, 2006-2010.....7,302  
Private Nonfarm Establishments.....417

**Houghton County**

Housing Units, 2011 .....18,656  
Households, 2006-2010.....13,991  
Private Nonfarm Establishments.....927

**Ontonagon County**

Housing Units, 2011 .....5,680  
Households, 2006-2010.....3,410  
Private Nonfarm Establishments.....208

**Iron County**

Housing Units, 2011 .....9,220  
Households, 2006-2010.....5,386  
Private Nonfarm Establishments.....390

**Total of Counties**

Housing Units, 2011 .....52,081  
Households, 2006-2010.....34,382  
Private Nonfarm Establishments.....2,210

**APPENDIX V: POSSIBLE SOURCES OF WOOD RESIDUE**

<b>Company</b>	<b>Type/Products</b>	<b>Address</b>	<b>County</b>	<b>Annual Production</b>
Horner Flooring Company	Hardwood flooring/sports flooring	P.O. Box 380 23400 Hellmen Ave. Dollar Bay, MI 49922	Houghton	501-1000 MBF
Northern Hardwoods	Sawmill and/or planing mill	P.O. Box 189 45807 M-26 South Range, MI 49963	Houghton	5001 + MBF 22 mmbf
Connor Sports Flooring Corp.	Sports flooring	P.O. Box 246 251 Industrial Park Rd. Amasa, MI 49903	Iron	5001+MBF
Magiglide, Inc.	Doors, wood, and covered wood	257 Industrial Park Rd. Crystal Falls, MI 49920	Iron	501-1000 MBF
Pine River Hardwoods, LLC.	Sawmill, lumber, kiln drying, sawdust, and chips	225 Corral Road Amasa, MI 49903	Iron	5001+ MBF
Sculptured Log Homes, Inc.	Log cabins, prefabricated: wood furniture	160 Groulx Lane Gaastra, MI 49927	Iron	
Keweenaw Specialty Woods, Inc.	Flooring, hardwood, Moldings, wood and covered wood	P.O. Box 425 46 Mohawk St. Mohawk, MI 49950	Keweenaw	101-500 MBF
Tomahawks Log & Country Homes, Inc.	Log Cabins, prefabricated; wood, buildings, commercial	HC-1, Box 155 Mohawk, MI 49930	Keweenaw	1001-3000 MBF
Bessemer Plywood Corporation	Mill	P.O. Box 76 1000 Yale Ave. Bessemer, MI 49911	Gogebic	60MM SQFT
Bratu's Hardwood Interiors	Sawmill and planing mill	E1382 Lake Rd Ironwood, MI 49938	Gogebic	101-500 MBF
Lagrew Lumber & Hardware	Sawmill and planing mill	N14511 Black River Rd. Ironwood, MI 49938	Gogebic	101-500 MBF
Ottawa Forest Products, Inc.	Sawmill and planing mill	P.O. Box 99 1243 Wall St. Ironwood, MI 49938	Gogebic	5001 + MBF 20,000 Cords 11 MMBF
Baraga Lumber, Besse Forest Products Group	Sawmill and planing mill	802 Michigan Ave. Baraga, MI 49908	Baraga	5001 + MBF
Collin Bros. Sawmill, Inc.	Sawmill and planing mill	P.O. Box 265 L'Anse Industrial Park, Lot #8 L'Anse, MI 49946	Baraga	
Erickson Lumber, Inc.	Sawmill	P.O. Box 66 L'Anse, MI 49946	Baraga	5001 + MBF
Milkevich Corp.	Logging (provides biomass)	511 Putnam St. Wakefield, MI 49968	Gogebic	130,000 Ton Chips

## APPENDIX VI: FINAL ADJUSTMENTS TO THE AIR TOXICS STANDARDS FOR INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL BOILERS AT AREA SOURCES FACILITIES ACTION

On December 20, 2012, the U.S. Environmental Protection Agency (EPA) finalized a specific set of adjustments to Clean Air Act standards, originally finalized in March 2011, for boilers and certain solid waste incinerators. These adjustments maintain extensive public health protections achieved by the March 2011 standards by reducing toxic air pollution, including mercury and particle pollution.

- At the same time, these adjustments increase the rules' flexibility and address concerns raised by stakeholders.
- The specific set of adjustments address new data provided to the agency and additional information about real-world performance and conditions under which affected boilers and incinerators operate.
- These adjustments maintain the dramatic cuts in the cost of implementation that were achieved in the final standards issued in March 2011.

This fact sheet summarizes the final adjustments to the "National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers." Boilers burn coal and other substances such as oil or biomass (e.g., wood) to produce steam and/or hot water, which is then used for energy or heat. They can also burn non-waste materials but do so usually only in small amounts.

- Industrial boilers are used in manufacturing, processing, mining, refining or any other industry.
- Commercial and institutional boilers are used in commercial establishments, medical centers, educational facilities and municipal buildings.
- The majority of area source boilers covered by this rule are located at commercial and institutional facilities.

The final adjustments do not change the intended coverage of the air toxics standards for industrial, commercial, and institutional boilers and will not affect the estimated emission reductions, control costs or the benefits of the standards in substance. The adjustments do not impose any additional regulatory requirements beyond those imposed by the previously promulgated boiler area source standards and, in fact, will afford relief to some boilers.

There are approximately 1.3 million boilers located at area source facilities that run on natural gas. They are not covered by the final standards or these adjustments. The area source standards covers approximately 183,000 boilers located at 92,000 area source facilities. Of the 183,000 covered units, approximately 182,400 (over 99%) need only to conduct periodic tune-ups, and some of these also need to perform a one-time energy assessment.

Approximately 600 coal-burning units (less than 1%), that represent the largest of these sources, are required to meet emission limits.

These adjustments will make it easier for owners and operators, as well as state and local agencies, to understand and implement the applicable requirements of the air toxics standards.

### ADJUSTMENTS TO FINAL STANDARDS

EPA is issuing adjustments to the March 2011 standards based on evaluation of additional information provided to the agency since that time, including the following key changes:

- Extending by two years the initial compliance date for existing area source boilers subject to the tune-up requirement.
- Revising the deadline for initial notification for existing area source boilers to no later than January 20, 2014.
- Revising provisions for existing dual-fuel fired units that fuel switch from gas to coal, biomass or oil such that they would still be considered existing sources.
- Providing subcategories for seasonally-operated boilers and limited-use boilers.
- Requiring tune-ups every five years, instead of every two, for certain area source boilers: seasonally-operated units, limited-use units, small oil-fired units and units with oxygen trim systems.
- Clarifying that temporary boilers and residential boilers are not part of the source categories being regulated.
- Revising particulate matter (PM) emission limit requirements such that combustion of oil meeting certain sulfur content requirements by new oil-fired boilers is considered an alternative method of meeting the PM emission standard and that such units are not required to meet the PM emission limit.
- Reducing the fuel sampling and performance testing requirements such that after demonstration of initial compliance, under certain circumstances, further fuel sampling for boilers subject to a mercury emission limit and further PM performance testing for boilers subject to a PM emission limit is not required.
- Providing the option of continuous emissions monitoring to demonstrate continuous compliance with the carbon monoxide (CO) emission limit.
- More clearly defining the scope of the energy assessment and allowing for more streamlined assessments, including allowing sources already operating under certain energy management programs to satisfy the assessment requirement.

## BENEFITS AND COSTS

The benefits and costs for these adjustments are, in substance, the same as those for the March 2011 final standards.

EPA estimates that the final standards will reduce nationwide emissions from existing and new area source boilers by approximately:

- 330 tons per year (tpy) of total air toxics,
- 90 pounds per year of mercury,
- 320 tpy of non-mercury metals,
- 9 tpy of polycyclic organic matter, and
- 2,500 tpy of PM.

These emission reductions will lead to significant annual health benefits. In 2014, these standards will protect public health by avoiding:

- 24 to 61 premature deaths,
- 17 cases of chronic bronchitis,
- 40 nonfatal heart attacks,
- 40 hospital and emergency room visits,
- 38 cases of acute bronchitis,
- 800 cases of respiratory symptoms,
- 3,200 days when people miss work or school,
- 420 cases of aggravated asthma, and
- 19,000 days when people must restrict their activities.

EPA estimates that the value of the benefits associated with reduced exposure to fine particles are \$210 million to \$520 million in the year 2015.

EPA is not able to estimate the benefits associated with reducing exposure to air toxics or other air pollutants, ecosystem effects, or visibility impairment because of data limitations. However, the standards will cut emissions of pollutants that are of particular concern for children. Mercury and lead can adversely affect developing brains – including effects on IQ, learning and memory.

The vast majority of area source boilers are estimated to be located at commercial and institutional facilities and generally owned or operated by small entities. EPA has limited the impact of the rulemaking on small entities by requiring that only existing coal-fired boilers meet emission limits for mercury and CO, establishing work practices or management practices, instead of emission limits, for existing small coal-fired boilers of less than 10 million British thermal units per hour of heat input and all existing biomass boilers and oil-fired boilers, and exempting most area source boilers from Clean Air Act (CAA) Title V permit requirements. EPA estimates that approximately 6,800 new area source boilers will be installed over the next 3 years.

EPA estimates that the cost for the final standards will be approximately \$490 million per year. This includes costs we expect industry to incur to comply as well as the standards' broader impact on the economy. We do not expect that these adjustments will result in any meaningful increase in the estimated costs to comply with the standards but will result in a decrease in burden on small facilities.

## SEPARATE BUT RELATED ACTIONS

EPA has finalized adjustments to the rule to reduce emissions of toxic air pollutants from new and existing industrial, commercial and institutional boilers and process heaters located at *major* source facilities. A major source facility has the potential to emit more than 10 tpy of any single air toxic or more than 25 tpy of any combination of air toxics.

EPA has also finalized adjustments to a rule to reduce air toxics from Commercial and Industrial Solid Waste Incinerators (CISWI). This final rule reflects the agency's final definition of *non-hazardous* solid waste.

EPA revised the non-hazardous secondary materials (NHSM) rule. This rule provides the standards and procedures for identifying whether non-hazardous secondary materials are solid waste under the Resource Conservation and Recovery Act when used as fuels or ingredients in combustion units such as boilers or solid waste incinerators.

Information on these actions is available at <http://www.epa.gov/airquality/combustion/actions.html>.

## BACKGROUND

On March 21, 2011, EPA promulgated national air toxics standards for area source industrial, commercial and institutional boilers. On the same day, EPA also promulgated national air toxics standards for major source industrial, commercial, and institutional boilers and for CISWI.

On March 21, 2011, EPA also published a notice initiating the reconsideration of certain aspects of the final rule for area source industrial, commercial and institutional boilers, as well as the final rules for major source industrial, commercial, and institutional boilers and for CISWI. The final rules reflect reasonable approaches consistent with the requirements of the CAA. However, some of the issues identified in comments on the 2010 proposed rules raised difficult technical issues that the agency believed would benefit from additional public involvement. In addition, the agency wanted to ensure the public had ample opportunity

to comment on changes in the final rule that were not in the proposal.

In the March 21, 2011 notice initiating reconsideration, EPA identified four issues for the area source boilers rule for which reconsideration and additional opportunity for public review and comment should be given. These included:

- Establishment of standards for biomass and oil-fired area source boilers based on generally available control technology (GACT);
- Providing an affirmative defense for malfunction events for area source boilers;
- Setting PM standards under GACT for oil-fired area source boilers; and
- Certain findings regarding the applicability of title V permitting requirements for area source boilers.

Following promulgation, EPA received petitions for reconsideration of certain provisions in the final rule and, on December 23, 2011, EPA published a notice proposing reconsideration of, and requesting comment on, certain specific issues:

- Establishing separate requirements for seasonally operated boilers;
- Clarifying that temporary boilers are excluded from the source category;
- Clarifying the initial compliance schedule for existing boilers subject to tune-ups;
- Defining periods of gas curtailment;
- Providing an optional CO compliance mechanism using a continuous emission monitoring system (CEMS);
- Averaging times for parameter monitoring;
- Providing an affirmative defense for malfunction events;
- Adjusting frequency of tune-up work practices for very small units;
- Selecting a 99 percent confidence interval for setting the CO emission limit;

- Establishing GACT-based limits for biomass and oil-fired boilers;
- Scope and duration of the energy assessment and deadline for completing the assessment;
- Establishing GACT-based limits for PM at new oil-fired boilers; and
- Exempting area sources from title V permitting requirements.

#### **FOR MORE INFORMATION**

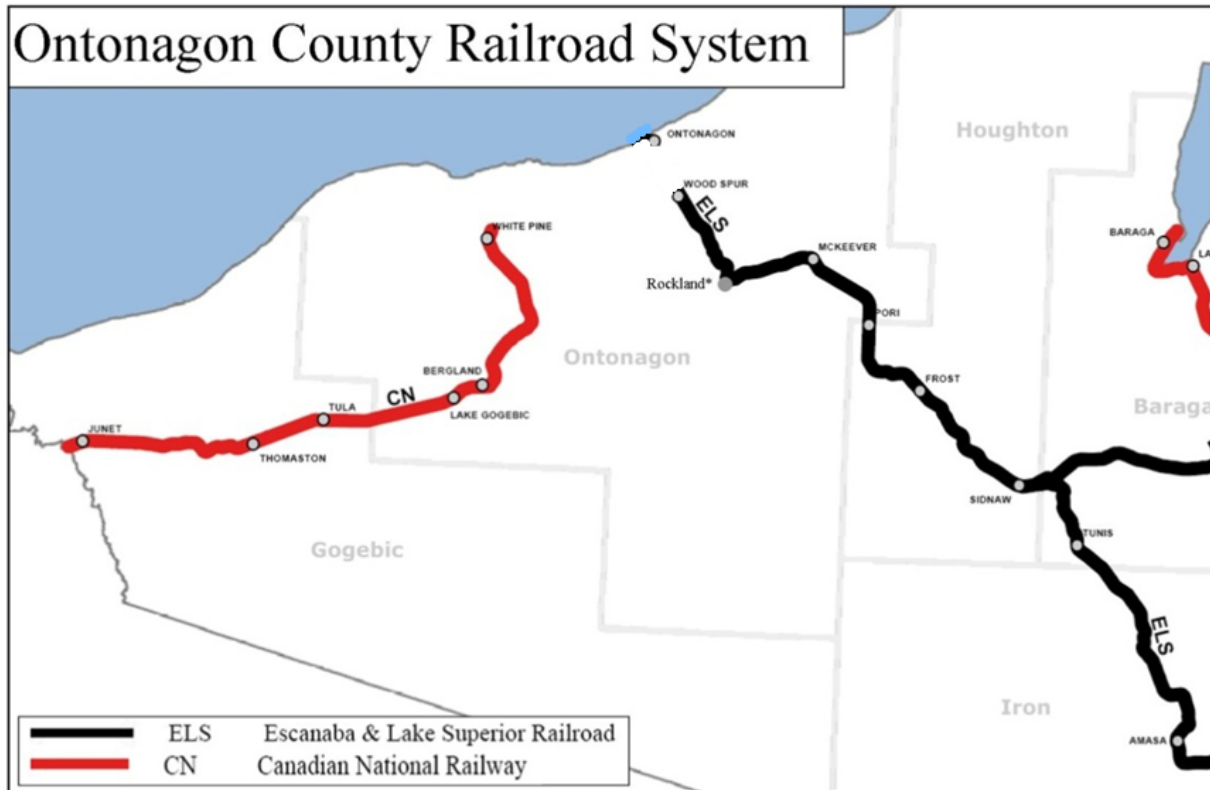
To download this notice from EPA's Web site, go to: <http://www.epa.gov/airquality/combustion/actions.html>.

Today's action and other background information are also available either electronically at <http://www.regulations.gov>, EPA's electronic public docket and comment system, or in hardcopy at the EPA Docket Center's Public Reading Room.

- The Public Reading Room is located in the EPA Headquarter Library, Room Number 3334, in the EPA West Building, 1301 Constitution Avenue, NW, Washington, DC. Hours of operation are 8:30 a.m. to 4:30 p.m. eastern standard time, Monday through Friday, excluding Federal holidays.
- Visitors are required to show photographic identification, pass through a metal detector and sign the EPA visitor log. All visitor materials will be processed through an X-ray machine as well. Visitors will be provided a badge that must be visible at all times.
- Materials for this action can be accessed using Docket ID No. EPA-HQ-OAR-2008-0790.

For further information about the rule, contact Ms. Mary Johnson of the EPA's Office of Air Quality Planning and Standards, Sector Policies and Programs Division, Energy Strategies Group, at (919) 541-5025 or by e-mail at [johnson.mary@epa.gov](mailto:johnson.mary@epa.gov).

APPENDIX VII: ONTONAGON COUNTY RAILROAD SYSTEM MAP



\*The Escanaba & Lake Superior Railroad from Rockland to Ontonagon is closed. Rockland is the end of the line.

## APPENDIX VIII: ONTONAGON HARBOR INFORMATION

“Ontonagon harbor consists of two parallel piers, 250 feet apart, extending in a NW 3/4 N direction from the mouth of the Ontonagon River. The west pier extends into the lake 1,700 feet from the shoreline and projects 150 feet beyond the east pier; the outer 150 feet is without superstructure, and vessels entering at night should be aware of the submerged cribs. The east pier projects 1,950 feet into the lake beyond the shoreline (the shorelines are not opposite each other.) The bar outside the piers continues to advance, and the channel across it is uncertain and shifting. A channel 100 feet wide has been dredged at Ontonagon, having an available depth of 16 feet from the inner end of the government piers to the merchandise dock. This places the dock in good condition permitting all vessels, except a few of the larger ones, to enter.”<sup>18</sup>

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<sup>18</sup> <http://www.ontonagonmi.org/boating.html>

**APPENDIX IX: ONTONAGON RESOURCE ANALYSIS DATA**

**26.1 - Average annual net growth of growing-stock trees (at least 5 inches d.b.h.) – Green Tons**

<b>Michigan</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Other yellow pines	-	-	-	-	-	-	482.6	482.6
Eastern white and red pines	169,487.1	2,359.1	-	32,173.6	2,343.0	-	176,801.6	383,164.3
Jack pine	(8,056.3)	(2,344.4)	-	11,536.3	605.5	-	14,105.1	15,846.2
Spruce and balsam fir	(27,077.1)	418.3	353.9	86,265.1	5,913.4	-	206,593.6	272,467.2
Eastern hemlock	35,912.2	-	-	(11,864.8)	2,364.0	-	160,006.2	186,417.6
Other eastern softwoods	46,455.6	-	-	92,684.7	2,699.9	-	150,149.8	291,990.1
Select red oaks	16,752.4	-	-	27,256.9	998.7	-	67,804.5	112,812.4
Other red oaks	131.9	-	-	-	-	-	-	131.9
Yellow birch	16,283.2	-	300.6	(2,029.9)	(17,348.7)	-	74,359.9	71,565.1
Hard maple	186,622.1	-	98.7	95,011.4	29,120.1	-	709,143.9	1,019,996.1
Soft maple	120,279.0	-	4,206.4	69,323.2	15,529.3	-	459,966.6	669,304.5
Beech	339.6	-	-	-	-	-	-	339.6
Ash	28,248.5	-	-	722.3	6,753.4	-	73,921.7	109,645.9
Cottonwood and aspen	86,354.8	-	-	34,251.9	20,813.5	-	125,107.7	266,527.9
Basswood	29,752.7	-	1,101.7	(1,577.2)	4,696.9	-	66,633.4	100,607.6
Other eastern soft HWDS	(11,572.6)	-	-	(1,812.5)	4,760.7	-	7,442.1	(1,182.3)
<b>Totals:</b>	<b>689,913.2</b>	<b>433.0</b>	<b>6,061.3</b>	<b>431,941.0</b>	<b>79,249.8</b>	<b>-</b>	<b>2,292,518.7</b>	<b>3,500,116.9</b>

<b>Wisconsin</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Other yellow pines	-	-	-	-	-	-	1,184.5	1,184.5
Eastern white and red pines	146,369.0	-	-	124,769.9	38,358.8	2,063.4	320,584.8	632,146.0
Jack pine	32,479.7	-	-	5,884.4	1,810.0	-	12,789.7	52,963.7
Spruce and balsam fir	(1,636.9)	-	-	12,092.9	39,359.7	1,204.8	92,666.2	143,686.6
Eastern hemlock	5,676.2	-	-	172.2	5,884.6	-	33,412.7	45,145.7
Other eastern softwoods	21,954.2	-	-	23,068.5	33,107.0	476.7	87,233.1	165,839.5
Select white oaks	549.5	-	-	-	-	-	147.8	697.4
Select red oaks	16,883.0	-	-	22,279.1	4,480.3	4,939.8	55,200.8	103,782.9
Other red oaks	3,172.7	-	-	1,542.3	721.2	-	5,442.1	10,878.3
Yellow birch	1,243.1	-	-	(3,835.6)	6,321.3	-	6,712.0	10,440.9
Hard maple	42,924.0	-	-	8,334.0	48,137.2	-	148,522.6	247,917.8
Soft maple	34,435.0	-	-	20,700.7	43,060.7	1,799.2	102,858.0	202,853.7
Ash	(1,414.3)	-	-	4,999.1	9,818.6	-	27,877.5	41,280.8
Cottonwood and aspen	8,629.8	-	-	36,482.9	72,439.5	702.5	69,933.0	188,187.7
Basswood	4,547.6	-	-	1,364.6	15,948.0	-	19,241.5	41,101.6
Other eastern soft HWDS	(1,755.7)	-	-	(7,734.7)	2,051.5	(943.6)	2,796.0	(5,586.5)
Other eastern hard HWDS	-	-	-	-	-	-	29.8	29.8
<b>Totals:</b>	<b>314,056.9</b>	<b>-</b>	<b>-</b>	<b>250,120.2</b>	<b>321,498.5</b>	<b>10,242.7</b>	<b>986,632.3</b>	<b>1,882,550.5</b>

<b>Total</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Other yellow pines	-	-	-	-	-	-	1,667	1,667
Eastern white and red pines	315,856	2,359	-	156,943	40,702	2,063	497,386	1,015,310
Jack pine	24,423	(2,344)	-	17,421	2,415	-	26,895	68,810
Spruce and balsam fir	(28,714)	418	354	98,358	45,273	1,205	299,260	416,154
Eastern hemlock	41,588	-	-	(11,693)	8,249	-	193,419	231,563
Other eastern softwoods	68,410	-	-	115,753	35,807	477	237,383	457,830
Select white oaks	550	-	-	-	-	-	148	697
Select red oaks	33,635	-	-	49,536	5,479	4,940	123,005	216,595
Other red oaks	3,305	-	-	1,542	721	-	5,442	11,010
Yellow birch	17,526	-	301	(5,865)	(11,027)	-	81,072	82,006
Hard maple	229,546	-	99	103,345	77,257	-	857,667	1,267,914
Soft maple	154,714	-	4,206	90,024	58,590	1,799	562,825	872,158
Beech	340	-	-	-	-	-	-	340
Ash	26,834	-	-	5,721	16,572	-	101,799	150,927
Cottonwood and aspen	94,985	-	-	70,735	93,253	702	195,041	454,716
Basswood	34,300	-	1,102	(213)	20,645	-	85,875	141,709
Other eastern soft HWDS	(13,328)	-	-	(9,547)	6,812	(944)	10,238	(6,769)
Other eastern hard HWDS	-	-	-	-	-	-	30	30
<b>Totals:</b>	<b>1,003,970</b>	<b>433</b>	<b>6,061</b>	<b>682,061</b>	<b>400,748</b>	<b>10,243</b>	<b>3,279,151</b>	<b>5,382,667</b>



### 40.1 - Average annual removals of growing-stock trees (at least 5 inches d.b.h.) – Green Tons

<b>Michigan</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Other yellow pines	-	-	-	-	-	-	6,612.1	6,612.1
Eastern white and red pines	3,520.2	-	-	14,817.7	-	-	48,660.1	66,998.1
Jack pine	9,593.4	-	-	35,498.9	6,594.2	-	45,504.1	97,190.5
Spruce and balsam fir	28,125.1	-	-	55,369.2	-	-	128,106.6	211,600.9
Eastern hemlock	3,340.1	-	-	-	-	-	78,259.2	81,599.2
Other eastern softwoods	240.2	-	-	3,114.6	-	-	23,828.6	27,183.5
Select red oaks	2,952.4	-	-	-	-	-	31,426.0	34,378.4
Yellow birch	5,334.4	-	-	2,088.1	596.3	-	183,255.3	191,274.0
Hard maple	58,201.9	-	-	59,739.0	24,900.1	-	584,487.7	727,328.7
Soft maple	20,845.1	-	-	58,073.2	-	-	294,787.9	373,706.2
Ash	2,661.2	-	-	-	-	-	77,156.0	79,817.2
Cottonwood and aspen	58,016.9	-	-	42,388.7	24,086.6	-	286,221.2	410,713.4
Basswood	10,802.0	-	-	-	797.8	-	87,406.5	99,006.3
Other eastern soft HWDS	5,103.8	-	-	35,710.3	1,594.0	-	74,611.0	117,019.1
<b>Totals:</b>	<b>208,736.6</b>	<b>-</b>	<b>-</b>	<b>306,799.7</b>	<b>58,568.9</b>	<b>-</b>	<b>1,950,322.4</b>	<b>2,524,427.6</b>

<b>Wisconsin</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Eastern white and red pines	8,025.0	-	-	30,545.5	7,749.0	-	26,435.7	72,755.2
Jack pine	1,397.6	-	-	11,026.3	-	-	77,412.5	89,836.4
Spruce and balsam fir	-	-	-	774.7	850.0	-	52,089.8	53,714.5
Eastern hemlock	-	-	-	-	-	-	787.0	787.0
Other eastern softwoods	-	-	-	259.3	1,250.9	-	7,731.7	9,241.9
Select red oaks	-	-	-	21,983.0	-	-	14,124.1	36,107.1
Other red oaks	-	-	-	-	-	-	2,162.0	2,162.0
Yellow birch	-	-	-	-	-	-	8,071.7	8,071.7
Hard maple	-	-	-	3,094.1	17,390.7	-	91,743.3	112,228.0
Soft maple	-	-	-	19,992.2	5,710.9	-	56,655.6	82,358.6
Ash	-	-	-	-	170.6	-	2,950.8	3,121.4
Cottonwood and aspen	-	-	-	75,207.2	43,007.6	-	163,845.6	282,060.4
Basswood	-	-	-	-	2,990.8	-	4,372.6	7,363.3
Other eastern soft HWDS	-	-	-	21,486.5	383.1	-	35,428.6	57,298.3
Other eastern hard HWDS	-	-	-	-	-	-	251.7	251.7
<b>Totals:</b>	<b>9,422.6</b>	<b>-</b>	<b>-</b>	<b>184,368.8</b>	<b>79,503.5</b>	<b>-</b>	<b>544,062.7</b>	<b>817,357.6</b>

<b>Total</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Other yellow pines	-	-	-	-	-	-	6,612	6,612
Eastern white and red pines	11,545	-	-	45,363	7,749	-	75,096	139,753
Jack pine	10,991	-	-	46,525	6,594	-	122,917	187,027
Spruce and balsam fir	28,125	-	-	56,144	850	-	180,196	265,315
Eastern hemlock	3,340	-	-	-	-	-	79,046	82,386
Other eastern softwoods	240	-	-	3,374	1,251	-	31,560	36,425
Select red oaks	2,952	-	-	21,983	-	-	45,550	70,486
Other red oaks	-	-	-	-	-	-	2,162	2,162
Yellow birch	5,334	-	-	2,088	596	-	191,327	199,346
Hard maple	58,202	-	-	62,833	42,291	-	676,231	839,557
Soft maple	20,845	-	-	78,065	5,711	-	351,443	456,065
Ash	2,661	-	-	-	171	-	80,107	82,939
Cottonwood and aspen	58,017	-	-	117,596	67,094	-	450,067	692,774
Basswood	10,802	-	-	-	3,789	-	91,779	106,370
Other eastern soft HWDS	5,104	-	-	57,197	1,977	-	110,040	174,317
Other eastern hard HWDS	-	-	-	-	-	-	252	252
<b>Totals:</b>	<b>218,159</b>	<b>-</b>	<b>-</b>	<b>491,169</b>	<b>138,072</b>	<b>-</b>	<b>2,494,385</b>	<b>3,341,785</b>

### 33.1 - Average annual mortality of growing-stock trees (at least 5 inches d.b.h.) – Green Tons

<b>Michigan</b>	Nat'l Forest	Dept. of Defense	Other Federal	State	Local (county, municipal, etc.)	Other non – Federal	Undiff. Private	Total
Other yellow pines	-	-	-	-	-	-	553.9	553.9
Eastern white and red pines	19,085.3	-	-	5,686.9	-	-	11,872.2	36,644.4
Jack pine	20,886.6	4,922.6	-	6,576.4	207.7	-	10,345.7	42,938.9
Spruce and balsam fir	199,261.8	-	-	76,709.5	6,526.0	-	333,460.8	615,958.1
Eastern hemlock	8,989.7	-	-	30,085.8	-	-	47,766.6	86,842.1
Other eastern softwoods	6,013.0	-	-	6,334.9	-	-	62,553.4	74,901.4
Select red oaks	-	-	-	-	-	-	4,767.6	4,767.6
Yellow birch	8,201.0	-	-	14,001.5	23,886.4	-	67,045.8	113,134.7
Hard maple	48,976.0	-	-	15,909.1	3,881.4	-	151,640.1	220,406.6
Soft maple	20,267.7	-	-	8,647.5	878.2	-	74,122.4	103,915.8
Ash	8,353.9	-	-	21,832.9	1,231.1	-	30,360.1	61,778.0
Cottonwood and aspen	109,630.0	-	-	132,785.1	3,620.4	-	276,598.8	522,634.4
Basswood	7,282.0	-	-	15,737.5	-	-	20,085.3	43,104.7
Other eastern soft HWDS	36,910.7	-	-	21,800.8	-	-	113,914.4	172,625.9
<b>Totals:</b>	<b>493,857.6</b>	<b>4,922.6</b>	<b>-</b>	<b>356,107.8</b>	<b>40,231.2</b>	<b>-</b>	<b>1,205,087.2</b>	<b>2,100,206.5</b>

<b>Wisconsin</b>	Nat'l Forest	Dept. of Defense	Other Federal	State	Local (county, municipal, etc.)	Other non – Federal	Undiff. Private	Total
Eastern white and red pines	15,358.4	-	-	1,872.8	7,068.1	-	7,956.5	32,255.8
Jack pine	14,290.8	-	-	-	998.0	-	2,899.5	18,188.3
Spruce and balsam fir	41,155.1	-	-	32,953.8	26,086.8	1,013.9	76,578.8	177,788.4
Eastern hemlock	-	-	-	12,031.9	1,478.1	-	9,685.8	23,195.8
Other eastern softwoods	741.6	-	-	1,742.8	4,814.1	-	5,544.6	12,843.1
Select red oaks	541.1	-	-	2,573.3	1,838.6	-	2,282.0	7,235.1
Other red oaks	-	-	-	-	-	-	3,345.5	3,345.5
Yellow birch	5,601.0	-	-	8,166.4	173.7	-	8,953.0	22,894.1
Hard maple	6,594.3	-	-	5,642.0	14,672.2	-	22,736.0	49,644.5
Soft maple	6,311.7	-	-	171.2	4,808.0	-	9,387.3	20,678.2
Ash	10,094.4	-	-	-	2,673.0	-	7,010.6	19,778.0
Cottonwood and aspen	26,158.2	-	-	41,085.4	36,015.6	-	194,200.9	297,460.1
Basswood	1,901.0	-	-	317.1	793.6	-	4,080.9	7,092.5
Other eastern soft HWDS	11,211.3	-	-	21,814.3	8,143.8	1,873.6	59,853.9	102,897.0
<b>Totals:</b>	<b>139,958.8</b>	<b>-</b>	<b>-</b>	<b>128,371.0</b>	<b>109,563.5</b>	<b>2,887.5</b>	<b>414,515.3</b>	<b>795,296.0</b>

<b>Total</b>	Nat'l Forest	Dept. of Defense	Other Federal	State	Local (county, municipal, etc.)	Other non – Federal	Undiff. Private	Total
Other yellow pines	-	-	-	-	-	-	554	554
Eastern white and red pines	34,444	-	-	7,560	7,068	-	19,829	68,900
Jack pine	35,177	4,923	-	6,576	1,206	-	13,245	61,127
Spruce and balsam fir	240,417	-	-	109,663	32,613	1,014	410,040	793,747
Eastern hemlock	8,990	-	-	42,118	1,478	-	57,452	110,038
Other eastern softwoods	6,755	-	-	8,078	4,814	-	68,098	87,744
Select red oaks	541	-	-	2,573	1,839	-	7,050	12,003
Other red oaks	-	-	-	-	-	-	3,345	3,345
Yellow birch	13,802	-	-	22,168	24,060	-	75,999	136,029
Hard maple	55,570	-	-	21,551	18,554	-	174,376	270,051
Soft maple	26,579	-	-	8,819	5,686	-	83,510	124,594
Ash	18,448	-	-	21,833	3,904	-	37,371	81,556
Cottonwood and aspen	135,788	-	-	173,871	39,636	-	470,800	820,094
Basswood	9,183	-	-	16,055	794	-	24,166	50,197
Other eastern soft HWDS	48,122	-	-	43,615	8,144	1,874	173,768	275,523
<b>Totals:</b>	<b>633,816</b>	<b>4,923</b>	<b>-</b>	<b>484,479</b>	<b>149,795</b>	<b>2,888</b>	<b>1,619,603</b>	<b>2,895,502</b>

**Average annual gross growth (at least 5 inches d.b.h.) – Green Tons**

<b>Michigan</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Other yellow pines	-	-	-	-	-	-	7,648.6	7,648.6
Eastern white and red pines	192,092.6	2,359.1	-	52,678.1	2,343.0	-	237,333.9	486,806.7
Jack pine	22,423.6	2,578.1	-	53,611.6	7,407.3	-	69,954.8	155,975.5
Spruce and balsam fir	200,309.9	418.3	353.9	218,343.9	12,439.4	-	668,161.0	1,100,026.3
Eastern hemlock	48,241.9	-	-	18,221.1	2,364.0	-	286,032.0	354,859.0
Other eastern softwoods	52,708.9	-	-	102,134.3	2,699.9	-	236,531.9	394,075.0
Select red oaks	19,704.7	-	-	27,256.9	998.7	-	103,998.1	151,958.4
Other red oaks	131.9	-	-	-	-	-	-	131.9
Yellow birch	29,818.6	-	300.6	14,059.6	7,133.9	-	324,661.1	375,973.8
Hard maple	293,800.0	-	98.7	170,659.5	57,901.5	-	1,445,271.8	1,967,731.4
Soft maple	161,391.8	-	4,206.4	136,043.9	16,407.5	-	828,876.9	1,146,926.6
Beech	339.6	-	-	-	-	-	-	339.6
Ash	39,263.6	-	-	22,555.2	7,984.6	-	181,437.8	251,241.1
Cottonwood and aspen	254,001.7	-	-	209,425.7	48,520.6	-	687,927.7	1,199,875.7
Basswood	47,836.8	-	1,101.7	14,160.2	5,494.7	-	174,125.1	242,718.6
Other eastern soft HWDS	30,441.8	-	-	55,698.6	6,354.7	-	195,967.5	288,462.6
<b>Totals:</b>	<b>1,392,507.4</b>	<b>5,355.5</b>	<b>6,061.3</b>	<b>1,094,848.6</b>	<b>178,049.9</b>	<b>-</b>	<b>5,447,928.2</b>	<b>8,124,750.9</b>

<b>Wisconsin</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Other yellow pines	-	-	-	-	-	-	1,184.5	1,184.5
Eastern white and red pines	169,752.4	-	-	157,188.2	53,175.9	2,063.4	354,977.1	737,157.0
Jack pine	48,168.1	-	-	16,910.6	2,808.0	-	93,101.7	160,988.4
Spruce and balsam fir	39,518.2	-	-	45,821.4	66,296.4	2,218.7	221,334.9	375,189.5
Eastern hemlock	5,676.2	-	-	12,204.0	7,362.6	-	43,885.5	69,128.4
Other eastern softwoods	22,695.8	-	-	25,070.6	39,171.9	476.7	100,509.5	187,924.5
Select white oaks	549.5	-	-	-	-	-	147.8	697.4
Select red oaks	17,424.1	-	-	46,835.3	6,318.9	4,939.8	71,606.9	147,125.1
Other red oaks	3,172.7	-	-	1,542.3	721.2	-	10,949.5	16,385.8
Yellow birch	6,844.0	-	-	4,330.8	6,495.1	-	23,736.7	41,406.7
Hard maple	49,518.3	-	-	17,070.1	80,200.1	-	263,001.9	409,790.3
Soft maple	40,746.7	-	-	40,864.2	53,579.6	1,799.2	168,900.8	305,890.5
Ash	8,680.1	-	-	4,999.1	12,662.2	-	37,838.8	64,180.2
Cottonwood and aspen	34,788.0	-	-	152,775.5	151,462.7	702.5	427,979.5	767,708.2
Basswood	6,448.6	-	-	1,681.6	19,732.3	-	27,694.9	55,557.5
Other eastern soft HWDS	9,455.6	-	-	35,566.2	10,578.5	930.0	98,078.6	154,608.8
Other eastern hard HWDS	-	-	-	-	-	-	281.5	281.5
<b>Totals:</b>	<b>463,438.2</b>	<b>-</b>	<b>-</b>	<b>562,860.0</b>	<b>510,565.4</b>	<b>13,130.2</b>	<b>1,945,210.2</b>	<b>3,495,204.1</b>

<b>Total</b>	<b>Nat'l Forest</b>	<b>Dept. of Defense</b>	<b>Other Federal</b>	<b>State</b>	<b>Local (county, municipal, etc.)</b>	<b>Other non – Federal</b>	<b>Undiff. Private</b>	<b>Total</b>
Other yellow pines	-	-	-	-	-	-	8,833.2	8,833.2
Eastern white and red pines	361,845.0	2,359.1	-	209,866.3	55,518.9	2,063.4	592,311.0	1,223,963.7
Jack pine	70,591.7	2,578.1	-	70,522.3	10,215.3	-	163,056.5	316,963.9
Spruce and balsam fir	239,828.1	418.3	353.9	264,165.3	78,735.8	2,218.7	889,495.9	1,475,215.8
Eastern hemlock	53,918.1	-	-	30,425.1	9,726.6	-	329,917.5	423,987.4
Other eastern softwoods	75,404.7	-	-	127,204.9	41,871.9	476.7	337,041.4	581,999.5
Select white oaks	549.5	-	-	-	-	-	147.8	697.4
Select red oaks	37,128.9	-	-	74,092.3	7,317.6	4,939.8	175,605.0	299,083.5
Other red oaks	3,304.6	-	-	1,542.3	721.2	-	10,949.5	16,517.7
Yellow birch	36,662.6	-	300.6	18,390.5	13,629.0	-	348,397.8	417,380.5
Hard maple	343,318.2	-	98.7	187,729.6	138,101.5	-	1,708,273.6	2,377,521.6
Soft maple	202,138.5	-	4,206.4	176,908.0	69,987.1	1,799.2	997,777.7	1,452,817.1
Beech	339.6	-	-	-	-	-	-	339.6
Ash	47,943.6	-	-	27,554.3	20,646.8	-	219,276.6	315,421.3
Cottonwood and aspen	288,789.7	-	-	362,201.2	199,983.3	702.5	1,115,907.2	1,967,583.9
Basswood	54,285.4	-	1,101.7	15,841.8	25,227.0	-	201,820.1	298,276.0
Other eastern soft HWDS	39,897.5	-	-	91,264.8	16,933.2	930.0	294,046.1	443,071.4
Other eastern hard HWDS	-	-	-	-	-	-	281.5	281.5
<b>Totals:</b>	<b>1,855,945.7</b>	<b>5,355.5</b>	<b>6,061.3</b>	<b>1,657,708.6</b>	<b>688,615.3</b>	<b>13,130.2</b>	<b>7,393,138.5</b>	<b>11,619,955.0</b>

**Area of forest land by U.S. Counties and Forest type group (in acres)- Non-Reserved (Gogebic and Ontonagon Counties)**

	<b>Gogebic</b>	<b>Ontonagon</b>	<b>Totals:</b>
White / red / jack pine group	22,479	32,490	54,968
Spruce / fir group	70,858	49,927	120,785
Oak / hickory group	5,773	11,330	17,103
Elm / ash / cottonwood group	71,619	34,678	106,296
Maple / beech / birch group	380,950	416,475	797,424
Aspen / birch group	92,037	143,672	235,709
Other hardwoods group	1,923	2,206	4,129
Nonstocked	1,850	961	2,811
<b>Total</b>	<b>647,487</b>	<b>691,739</b>	<b>1,339,226</b>

**Area of forest land by Ownership and Reserved status (in acres)**

	<b>Not reserved</b>	<b>Reserved</b>	<b>Total</b>
-- <i>Unknown owned</i> -- (-)	--	--	0
Unknown/not recorded (-1)	--	--	--
National Forest (11)	527,148	17,651	544,798
National Grassland (12)	--	--	--
Other National Forest (13)	--	--	--
National Park Service (21)	--	--	--
Bureau of Land Management (22)	--	--	--
Fish and Wildlife Service (23)	--	--	--
Department of Defense or Energy (24)	--	--	--
Other Federal (25)	--	--	--
State (31)	36,057	50,432	86,489
Local (county, municipal, etc.) (32)	76,785	--	76,785
Other non federal lands (33)	--	--	--
Undifferentiated private (46)	699,235	--	699,235
<b>Totals:</b>	<b>1,339,226</b>	<b>68,083</b>	<b>1,407,308</b>

**SOURCE AND USE OF FUNDS**

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**Porcupine Pellet Plant  
Source and Use of Funds  
December 31, 2014**

**USE OF FUNDS:**

Building and Equipment	4,358,193
Start-Up Costs	156,700
Wood Inventory (45 Days)	288,750
Bags and Pallets (45 Days)	60,000
Fuel for Equipment (30 Days)	425
Working Capital (90-Day Cash Outlay)	1,348,726
Capitalized Interest	<u>86,206</u>
TOTAL FUNDS REQUIRED	<u>6,299,000</u>

**SOURCE OF FUNDS:**

Owners' Equity	1,500,000
Loan/Bond	<u>4,799,000</u>
TOTAL FUNDS PROVIDED	<u>6,299,000</u>

## BALANCE SHEETS

### Porcupine Pellet Plant Balance Sheet | December 31, 2015

<i>Assets</i>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>Current Assets</b>												
Cash	1,409,506	796,033	676,813	455,011	176,913	5,108	3,303	1,500	4,865	20,523	66,150	463,560
Accounts Receivable	0	337,753	225,169	168,876	225,169	225,169	225,169	450,337	619,213	844,382	844,382	844,382
Inventory (wood)												
Raw Material	251,831	280,889	343,867	423,805	486,783	549,761	612,739	607,877	552,135	428,553	304,971	181,390
Work in process	201,438	224,682	275,058	338,999	389,375	439,751	490,127	486,238	441,650	342,797	243,944	145,093
Finished Goods	237,410	264,805	324,176	399,536	458,908	518,280	577,651	573,068	520,518	404,012	287,507	171,003
Supplies	35,965	40,115	49,109	60,525	69,519	78,513	87,508	86,813	78,852	61,203	43,554	25,905
<b>TOTAL CURRENT ASSETS</b>	<b>2,136,150</b>	<b>1,944,277</b>	<b>1,894,192</b>	<b>1,846,752</b>	<b>1,806,667</b>	<b>1,816,582</b>	<b>1,996,497</b>	<b>2,205,833</b>	<b>2,217,233</b>	<b>2,101,470</b>	<b>1,790,508</b>	<b>1,831,333</b>
<b>Property, Plant, &amp; Equipment</b>												
Land	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Building	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141
Equipment	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052
Startup costs	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906
Less: Accumulated depreciation	(28,637)	(57,274)	(85,911)	(114,548)	(143,185)	(171,822)	(200,459)	(229,096)	(257,733)	(286,370)	(315,008)	(343,646)
<b>NET CAPITALIZED COSTS</b>	<b>4,472,462</b>	<b>4,443,825</b>	<b>4,415,188</b>	<b>4,386,551</b>	<b>4,357,914</b>	<b>4,329,277</b>	<b>4,300,640</b>	<b>4,272,003</b>	<b>4,243,366</b>	<b>4,214,729</b>	<b>4,186,091</b>	<b>4,157,453</b>
<b>TOTAL ASSETS</b>	<b>6,608,612</b>	<b>6,388,102</b>	<b>6,309,380</b>	<b>6,233,303</b>	<b>6,164,581</b>	<b>6,145,859</b>	<b>6,297,137</b>	<b>6,477,836</b>	<b>6,460,599</b>	<b>6,316,199</b>	<b>5,976,599</b>	<b>5,988,786</b>
<b>Liabilities and Owner's Equity</b>												
<b>Current Liabilities</b>												
Accounts payable and accrued expenses	574,253	417,753	407,753	407,753	407,753	407,753	407,753	417,753	407,751	407,751	407,751	407,751
Line of credit	0	0	0	0	0	50,000	270,000	490,000	500,000	350,000	0	0
Current portion of long-term debt	212,044	212,044	212,044	212,044	212,044	212,044	212,044	212,044	212,044	212,044	212,044	223,284
<b>TOTAL CURRENT LIABILITIES</b>	<b>786,297</b>	<b>629,797</b>	<b>619,797</b>	<b>619,797</b>	<b>619,797</b>	<b>669,797</b>	<b>889,797</b>	<b>1,119,797</b>	<b>1,119,795</b>	<b>969,795</b>	<b>619,795</b>	<b>631,035</b>
<b>Long-Term Debt</b>												
Notes payable	4,782,197	4,763,154	4,746,184	4,728,419	4,711,287	4,693,364	4,676,068	4,658,691	4,640,531	4,622,988	4,604,666	4,586,956
Less: current portion of long-term debt	(212,044)	(212,044)	(212,044)	(212,044)	(212,044)	(212,044)	(212,044)	(212,044)	(212,044)	(212,044)	(212,044)	(223,284)
<b>TOTAL LONG TERM DEBT</b>	<b>4,570,153</b>	<b>4,551,110</b>	<b>4,534,140</b>	<b>4,516,375</b>	<b>4,499,243</b>	<b>4,481,320</b>	<b>4,464,024</b>	<b>4,446,647</b>	<b>4,428,487</b>	<b>4,410,944</b>	<b>4,392,622</b>	<b>4,363,672</b>
<b>Owners' Equity</b>												
Owner's equity	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Retained earnings	(247,838)	(292,805)	(344,557)	(402,869)	(454,459)	(505,258)	(556,684)	(588,608)	(587,683)	(564,540)	(535,818)	(505,921)
<b>TOTAL OWNERS' EQUITY</b>	<b>1,252,162</b>	<b>1,207,195</b>	<b>1,155,443</b>	<b>1,097,131</b>	<b>1,045,541</b>	<b>994,742</b>	<b>943,316</b>	<b>911,392</b>	<b>912,317</b>	<b>935,460</b>	<b>964,182</b>	<b>994,079</b>
<b>TOTAL LIABILITIES AND OWNERS' EQUITY</b>	<b>6,608,612</b>	<b>6,388,102</b>	<b>6,309,380</b>	<b>6,233,303</b>	<b>6,164,581</b>	<b>6,145,859</b>	<b>6,297,137</b>	<b>6,477,836</b>	<b>6,460,599</b>	<b>6,316,199</b>	<b>5,976,599</b>	<b>5,988,786</b>



## Porcupine Pellet Plant Balance Sheet | December 31, 2016

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>Assets</b>												
<i>Current Assets</i>												
Cash	860,970	924,783	734,847	391,162	15,477	11,792	18,106	14,420	18,485	21,873	25,603	232,193
Accounts Receivable	902,000	492,000	328,000	246,000	328,000	328,000	328,000	656,000	902,000	1,230,000	1,230,000	1,230,000
Inventory (wood)												
Raw Material	120,921	182,686	293,043	427,695	538,052	648,408	758,764	771,938	712,223	555,325	398,427	241,530
Work in process	97,016	146,571	235,111	343,144	431,684	520,224	608,765	619,334	571,424	445,543	319,662	193,782
Finished Goods	114,724	173,324	278,025	405,777	510,477	615,178	719,879	732,377	675,723	526,865	378,008	229,152
Supplies	17,708	26,753	42,914	62,632	78,793	94,954	111,115	113,044	104,299	81,323	58,346	35,370
<b>TOTAL CURRENT ASSETS</b>	<b>2,113,339</b>	<b>1,946,117</b>	<b>1,911,940</b>	<b>1,876,410</b>	<b>1,902,483</b>	<b>2,218,556</b>	<b>2,544,629</b>	<b>2,907,113</b>	<b>2,984,154</b>	<b>2,860,929</b>	<b>2,410,046</b>	<b>2,162,027</b>
<i>Property, Plant, &amp; Equipment</i>												
Land	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Building	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141
Equipment	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052
Startup costs	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906
Less: Accumulated depreciation	(372,283)	(400,920)	(429,557)	(458,194)	(486,831)	(515,468)	(544,105)	(572,742)	(601,379)	(630,016)	(658,654)	(687,292)
<b>NET CAPITALIZED COSTS</b>	<b>4,128,816</b>	<b>4,100,179</b>	<b>4,071,542</b>	<b>4,042,905</b>	<b>4,014,268</b>	<b>3,985,631</b>	<b>3,956,994</b>	<b>3,928,357</b>	<b>3,899,720</b>	<b>3,871,083</b>	<b>3,842,445</b>	<b>3,813,807</b>
<b>TOTAL ASSETS</b>	<b>6,242,155</b>	<b>6,046,296</b>	<b>5,983,482</b>	<b>5,919,315</b>	<b>5,916,751</b>	<b>6,204,187</b>	<b>6,501,623</b>	<b>6,835,470</b>	<b>6,883,874</b>	<b>6,732,012</b>	<b>6,252,491</b>	<b>5,975,834</b>
<b>Liabilities and Owner's Equity</b>												
<i>Current Liabilities</i>												
Accounts payable and accrued expenses	798,966	642,716	632,466	632,466	632,466	632,466	632,466	642,716	632,465	632,465	632,465	632,465
Line of credit	0	0	0	0	50,000	390,000	740,000	1,080,000	1,110,000	900,000	350,000	0
Current portion of long-term debt	223,284	223,284	223,284	223,284	223,284	223,284	223,284	223,284	223,284	223,284	223,284	236,600
<b>TOTAL CURRENT LIABILITIES</b>	<b>1,022,250</b>	<b>866,000</b>	<b>855,750</b>	<b>855,750</b>	<b>905,750</b>	<b>1,245,750</b>	<b>1,595,750</b>	<b>1,946,000</b>	<b>1,965,749</b>	<b>1,755,749</b>	<b>1,205,749</b>	<b>869,065</b>
<i>Long-Term Debt</i>												
Notes payable	4,569,163	4,549,909	4,531,943	4,513,210	4,495,072	4,476,172	4,457,861	4,439,465	4,420,314	4,401,742	4,382,421	4,363,672
Less: current portion of long-term debt	(223,284)	(223,284)	(223,284)	(223,284)	(223,284)	(223,284)	(223,284)	(223,284)	(223,284)	(223,284)	(223,284)	(236,600)
<b>TOTAL LONG TERM DEBT</b>	<b>4,345,879</b>	<b>4,326,625</b>	<b>4,308,659</b>	<b>4,289,926</b>	<b>4,271,788</b>	<b>4,252,888</b>	<b>4,234,577</b>	<b>4,216,181</b>	<b>4,197,030</b>	<b>4,178,458</b>	<b>4,159,137</b>	<b>4,127,072</b>
<i>Owners' Equity</i>												
Owner's equity	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Retained earnings	(625,974)	(646,329)	(680,927)	(726,361)	(760,787)	(794,451)	(828,704)	(826,711)	(778,905)	(702,195)	(612,395)	(520,303)
<b>TOTAL OWNERS' EQUITY</b>	<b>874,026</b>	<b>853,671</b>	<b>819,073</b>	<b>773,639</b>	<b>739,213</b>	<b>705,549</b>	<b>671,296</b>	<b>673,289</b>	<b>721,095</b>	<b>797,805</b>	<b>887,605</b>	<b>979,697</b>
<b>TOTAL LIABILITIES AND OWNERS' EQUITY</b>	<b>6,242,155</b>	<b>6,046,296</b>	<b>5,983,482</b>	<b>5,919,315</b>	<b>5,916,751</b>	<b>6,204,187</b>	<b>6,501,623</b>	<b>6,835,470</b>	<b>6,883,874</b>	<b>6,732,012</b>	<b>6,252,491</b>	<b>5,975,834</b>

## Porcupine Pellet Plant Balance Sheet | December 31, 2017

<i>Assets</i>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>Current Assets</b>												
Cash	790,507	985,031	813,048	434,723	19,746	31,420	30,945	40,467	69,634	51,921	56,665	757,497
Accounts Receivable	1,149,500	627,000	418,000	313,500	418,000	418,000	418,000	836,000	1,149,500	1,567,500	1,567,500	1,567,500
Inventory (wood)												
Raw Material	163,751	233,778	363,971	524,246	654,439	784,632	914,824	924,686	844,299	643,580	442,861	242,142
Work in process	128,729	183,779	286,127	412,123	514,471	616,819	719,167	726,919	663,725	505,935	348,145	190,354
Finished Goods	152,826	218,180	339,686	489,268	610,774	732,280	853,786	862,990	787,966	600,640	413,313	225,986
Supplies	24,095	34,398	53,555	77,138	96,295	115,451	134,608	136,059	124,231	94,697	65,163	35,629
<b>TOTAL CURRENT ASSETS</b>	<b>2,409,408</b>	<b>2,282,166</b>	<b>2,274,387</b>	<b>2,250,998</b>	<b>2,313,725</b>	<b>2,698,602</b>	<b>3,071,330</b>	<b>3,527,121</b>	<b>3,639,355</b>	<b>3,464,273</b>	<b>2,893,647</b>	<b>3,019,108</b>
<b>Property, Plant, &amp; Equipment</b>												
Land	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Building	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141
Equipment	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052
Startup costs	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906
Less: Accumulated depreciation	(715,929)	(744,566)	(773,203)	(801,840)	(830,477)	(859,114)	(887,751)	(916,388)	(945,025)	(973,662)	(1,002,300)	(1,030,938)
<b>NET CAPITALIZED COSTS</b>	<b>3,785,170</b>	<b>3,756,533</b>	<b>3,727,896</b>	<b>3,699,259</b>	<b>3,670,622</b>	<b>3,641,985</b>	<b>3,613,348</b>	<b>3,584,711</b>	<b>3,556,074</b>	<b>3,527,437</b>	<b>3,498,799</b>	<b>3,470,161</b>
<b>TOTAL ASSETS</b>	<b>6,194,578</b>	<b>6,038,699</b>	<b>6,002,283</b>	<b>5,950,257</b>	<b>5,984,347</b>	<b>6,340,587</b>	<b>6,684,678</b>	<b>7,111,832</b>	<b>7,195,429</b>	<b>6,991,710</b>	<b>6,392,446</b>	<b>6,489,269</b>
<b>Liabilities and Owner's Equity</b>												
<b>Current Liabilities</b>												
Accounts payable and accrued expenses	915,756	759,762	749,256	749,256	749,256	749,256	749,256	759,762	749,256	749,256	749,256	749,252
Line of credit	0	0	0	0	60,000	450,000	820,000	1,200,000	1,200,000	840,000	70,000	0
Current portion of long-term debt	236,600	236,600	236,600	236,600	236,600	236,600	236,600	236,600	236,600	236,600	236,600	249,946
<b>TOTAL CURRENT LIABILITIES</b>	<b>1,152,356</b>	<b>996,362</b>	<b>985,856</b>	<b>985,856</b>	<b>1,045,856</b>	<b>1,435,856</b>	<b>1,805,856</b>	<b>2,196,362</b>	<b>2,185,856</b>	<b>1,825,856</b>	<b>1,055,856</b>	<b>999,198</b>
<b>Long-Term Debt</b>												
Notes payable	4,344,836	4,323,947	4,304,925	4,285,166	4,265,963	4,246,027	4,226,642	4,207,165	4,186,964	4,167,302	4,146,921	4,127,072
Less: current portion of long-term debt	(236,600)	(236,600)	(236,600)	(236,600)	(236,600)	(236,600)	(236,600)	(236,600)	(236,600)	(236,600)	(236,600)	(249,946)
<b>TOTAL LONG TERM DEBT</b>	<b>4,108,236</b>	<b>4,087,347</b>	<b>4,068,325</b>	<b>4,048,566</b>	<b>4,029,363</b>	<b>4,009,427</b>	<b>3,990,042</b>	<b>3,970,565</b>	<b>3,950,364</b>	<b>3,930,702</b>	<b>3,910,321</b>	<b>3,877,126</b>
<b>Owners' Equity</b>												
Owner's equity	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Retained earnings	(566,014)	(545,010)	(551,898)	(584,165)	(590,872)	(604,696)	(611,220)	(555,095)	(440,791)	(264,848)	(73,731)	112,945
<b>TOTAL OWNERS' EQUITY</b>	<b>933,986</b>	<b>954,990</b>	<b>948,102</b>	<b>915,835</b>	<b>909,128</b>	<b>895,304</b>	<b>888,780</b>	<b>944,905</b>	<b>1,059,209</b>	<b>1,235,152</b>	<b>1,426,269</b>	<b>1,612,945</b>
<b>TOTAL LIABILITIES AND OWNERS' EQUITY</b>	<b>6,194,578</b>	<b>6,038,699</b>	<b>6,002,283</b>	<b>5,950,257</b>	<b>5,984,347</b>	<b>6,340,587</b>	<b>6,684,678</b>	<b>7,111,832</b>	<b>7,195,429</b>	<b>6,991,710</b>	<b>6,392,446</b>	<b>6,489,269</b>



## Porcupine Pellet Plant Balance Sheet | December 31, 2018

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>Assets</b>												
<i>Current Assets</i>												
Cash	1,536,524	1,741,679	1,570,065	1,124,846	644,500	199,281	55,436	51,591	61,602	65,870	582,098	1,308,378
Accounts Receivable	1,171,500	639,000	426,000	319,500	426,000	426,000	426,000	852,000	1,171,500	1,597,500	1,597,500	1,597,500
Inventory (wood)												
Raw Material	159,567	230,221	361,320	522,641	653,740	784,839	915,937	926,146	845,686	644,336	442,986	241,637
Work in process	126,759	182,886	287,030	415,183	519,327	623,471	727,615	735,725	671,808	511,857	351,905	191,955
Finished Goods	150,928	217,756	341,757	494,344	618,344	742,345	866,346	876,001	799,898	609,449	419,001	228,554
Supplies	24,183	34,891	54,759	79,208	99,077	118,945	138,814	140,361	128,167	97,652	67,136	36,621
<b>TOTAL CURRENT ASSETS</b>	<b>3,169,461</b>	<b>3,046,433</b>	<b>3,040,931</b>	<b>2,955,722</b>	<b>2,960,988</b>	<b>2,894,881</b>	<b>3,130,148</b>	<b>3,581,824</b>	<b>3,678,661</b>	<b>3,526,664</b>	<b>3,460,626</b>	<b>3,604,645</b>
<i>Property, Plant, &amp; Equipment</i>												
Land	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Building	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141
Equipment	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052
Startup costs	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906
Less: Accumulated depreciation	(1,059,575)	(1,088,212)	(1,116,849)	(1,145,486)	(1,174,123)	(1,202,760)	(1,231,397)	(1,260,034)	(1,288,671)	(1,317,308)	(1,345,946)	(1,374,584)
<b>NET CAPITALIZED COSTS</b>	<b>3,441,524</b>	<b>3,412,887</b>	<b>3,384,250</b>	<b>3,355,613</b>	<b>3,326,976</b>	<b>3,298,339</b>	<b>3,269,702</b>	<b>3,241,065</b>	<b>3,212,428</b>	<b>3,183,791</b>	<b>3,155,153</b>	<b>3,126,515</b>
<b>TOTAL ASSETS</b>	<b>6,610,985</b>	<b>6,459,320</b>	<b>6,425,181</b>	<b>6,311,335</b>	<b>6,287,964</b>	<b>6,193,220</b>	<b>6,399,850</b>	<b>6,822,889</b>	<b>6,891,089</b>	<b>6,710,455</b>	<b>6,615,779</b>	<b>6,731,160</b>
<b>Liabilities and Owner's Equity</b>												
<i>Current Liabilities</i>												
Accounts payable and accrued expenses	927,125	771,394	760,625	760,625	760,625	760,625	760,625	771,394	760,625	760,625	760,625	760,620
Line of credit	0	0	0	0	0	0	230,000	600,000	640,000	280,000	0	0
Current portion of long-term debt	249,946	249,946	249,946	249,946	249,946	249,946	249,946	249,946	249,946	249,946	249,946	264,045
<b>TOTAL CURRENT LIABILITIES</b>	<b>1,177,071</b>	<b>1,021,340</b>	<b>1,010,571</b>	<b>1,010,571</b>	<b>1,010,571</b>	<b>1,010,571</b>	<b>1,240,571</b>	<b>1,621,340</b>	<b>1,650,571</b>	<b>1,290,571</b>	<b>1,010,571</b>	<b>1,024,665</b>
<i>Long-Term Debt</i>												
Notes payable	4,107,130	4,085,239	4,065,102	4,044,259	4,023,930	4,002,901	3,982,379	3,961,762	3,940,451	3,919,638	3,898,137	3,877,126
Less: current portion of long-term debt	(249,946)	(249,946)	(249,946)	(249,946)	(249,946)	(249,946)	(249,946)	(249,946)	(249,946)	(249,946)	(249,946)	(264,045)
<b>TOTAL LONG TERM DEBT</b>	<b>3,857,184</b>	<b>3,835,293</b>	<b>3,815,156</b>	<b>3,794,313</b>	<b>3,773,984</b>	<b>3,752,955</b>	<b>3,732,433</b>	<b>3,711,816</b>	<b>3,690,505</b>	<b>3,669,692</b>	<b>3,648,191</b>	<b>3,613,081</b>
<i>Owners' Equity</i>												
Owner's equity	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Retained earnings	76,730	102,687	99,454	6,451	3,409	(70,306)	(73,154)	(10,267)	50,013	250,192	457,017	593,414
<b>TOTAL OWNERS' EQUITY</b>	<b>1,576,730</b>	<b>1,602,687</b>	<b>1,599,454</b>	<b>1,506,451</b>	<b>1,503,409</b>	<b>1,429,694</b>	<b>1,426,846</b>	<b>1,489,733</b>	<b>1,550,013</b>	<b>1,750,192</b>	<b>1,957,017</b>	<b>2,093,414</b>
<b>TOTAL LIABILITIES AND OWNERS' EQUITY</b>	<b>6,610,985</b>	<b>6,459,320</b>	<b>6,425,181</b>	<b>6,311,335</b>	<b>6,287,964</b>	<b>6,193,220</b>	<b>6,399,850</b>	<b>6,822,889</b>	<b>6,891,089</b>	<b>6,710,455</b>	<b>6,615,779</b>	<b>6,731,160</b>

## Porcupine Pellet Plant Balance Sheet | December 31, 2019

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>Assets</b>												
<i>Current Assets</i>												
Cash	2,106,038	2,322,374	2,151,670	1,694,705	1,209,541	752,576	375,909	69,245	75,244	847,182	1,164,019	1,900,559
Accounts Receivable	1,193,500	651,000	434,000	325,500	434,000	434,000	434,000	868,000	1,193,500	1,627,500	1,627,500	1,627,500
Inventory (wood)												
Raw Material	158,658	229,647	361,368	523,454	655,174	786,895	918,616	928,875	848,038	645,738	443,439	241,138
Work in process	127,359	184,344	290,080	420,190	525,926	631,662	737,398	745,633	680,743	518,352	355,961	193,568
Finished Goods	152,126	220,193	346,491	501,905	628,203	754,500	880,799	890,636	813,126	619,155	425,184	231,211
Supplies	24,767	35,849	56,412	81,714	102,276	122,839	143,401	145,003	132,383	100,803	69,223	37,643
<b>TOTAL CURRENT ASSETS</b>	<b>3,762,448</b>	<b>3,643,407</b>	<b>3,640,021</b>	<b>3,547,468</b>	<b>3,555,120</b>	<b>3,482,472</b>	<b>3,490,123</b>	<b>3,647,392</b>	<b>3,743,034</b>	<b>4,358,730</b>	<b>4,085,326</b>	<b>4,231,619</b>
<i>Property, Plant, &amp; Equipment</i>												
Land	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Building	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	810,141	310,141	810,141	810,141
Equipment	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052	3,428,052
Startup costs	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906	242,906
Less: Accumulated depreciation	(1,403,221)	(1,431,858)	(1,460,495)	(1,489,132)	(1,517,769)	(1,546,406)	(1,575,043)	(1,603,680)	(1,632,317)	(1,660,954)	(1,689,592)	(1,718,230)
<b>NET CAPITALIZED COSTS</b>	<b>3,097,878</b>	<b>3,069,241</b>	<b>3,040,604</b>	<b>3,011,967</b>	<b>2,983,330</b>	<b>2,954,693</b>	<b>2,926,056</b>	<b>2,897,419</b>	<b>2,868,782</b>	<b>2,340,145</b>	<b>2,811,507</b>	<b>2,782,869</b>
<b>TOTAL ASSETS</b>	<b>6,860,326</b>	<b>6,712,648</b>	<b>6,680,625</b>	<b>6,559,435</b>	<b>6,538,450</b>	<b>6,437,165</b>	<b>6,416,179</b>	<b>6,544,811</b>	<b>6,611,816</b>	<b>6,698,875</b>	<b>6,896,833</b>	<b>7,014,488</b>
<b>Liabilities and Owner's Equity</b>												
<i>Current Liabilities</i>												
Accounts payable and accrued expenses	937,945	782,483	771,445	771,445	771,445	771,445	771,443	782,481	771,443	771,443	771,443	771,447
Line of credit	0	0	0	0	0	0	0	70,000	110,000	0	0	0
Current portion of long-term debt	264,045	264,045	264,045	264,045	264,045	264,045	264,045	264,045	264,045	264,045	264,045	278,373
<b>TOTAL CURRENT LIABILITIES</b>	<b>1,201,990</b>	<b>1,046,528</b>	<b>1,035,490</b>	<b>1,035,490</b>	<b>1,035,490</b>	<b>1,035,490</b>	<b>1,035,488</b>	<b>1,116,526</b>	<b>1,145,488</b>	<b>1,035,488</b>	<b>1,035,488</b>	<b>1,049,820</b>
<i>Long-Term Debt</i>												
Notes payable	3,856,017	3,833,066	3,811,751	3,789,762	3,768,245	3,746,060	3,724,338	3,702,516	3,680,033	3,658,003	3,635,319	3,613,081
Less: current portion of long-term debt	(264,045)	(264,045)	(264,045)	(264,045)	(264,045)	(264,045)	(264,045)	(264,045)	(264,045)	(264,045)	(264,045)	(278,373)
<b>TOTAL LONG TERM DEBT</b>	<b>3,591,972</b>	<b>3,569,021</b>	<b>3,547,706</b>	<b>3,525,717</b>	<b>3,504,200</b>	<b>3,482,015</b>	<b>3,460,293</b>	<b>3,438,471</b>	<b>3,415,988</b>	<b>3,393,958</b>	<b>3,371,274</b>	<b>3,334,708</b>
<i>Owners' Equity</i>												
Owner's equity	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Retained earnings	566,364	597,099	597,429	498,228	498,760	419,660	420,398	489,814	550,340	769,429	990,071	1,129,960
<b>TOTAL OWNERS' EQUITY</b>	<b>2,066,364</b>	<b>2,097,099</b>	<b>2,097,429</b>	<b>1,998,228</b>	<b>1,998,760</b>	<b>1,919,660</b>	<b>1,920,398</b>	<b>1,989,814</b>	<b>2,050,340</b>	<b>2,269,429</b>	<b>2,490,071</b>	<b>2,629,960</b>
<b>TOTAL LIABILITIES AND OWNERS' EQUITY</b>	<b>6,860,326</b>	<b>6,712,648</b>	<b>6,680,625</b>	<b>6,559,435</b>	<b>6,538,450</b>	<b>6,437,165</b>	<b>6,416,179</b>	<b>6,544,811</b>	<b>6,611,816</b>	<b>6,698,875</b>	<b>6,896,833</b>	<b>7,014,488</b>

## CASH FLOW STATEMENTS

### Porcupine Pellet Plant Cash Flow Statement | December 31, 2015

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Net Income	(247,838)	(44,967)	(51,751)	(58,313)	(51,589)	(50,799)	(51,425)	(31,924)	924	23,143	28,722	29,897	(505,921)
<b><i>Cash Flows from Operating Activities</i></b>													
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Accounts receivable	0	(337,753)	112,584	56,292	(56,292)	0	0	(225,169)	(168,876)	(225,169)	0	0	(844,382)
Inventories	(377,469)	(83,847)	(181,720)	(230,653)	(181,722)	(181,719)	(181,721)	14,030	160,842	356,589	356,589	356,585	(174,216)
Accounts payable and accrued expenses	574,253	(156,500)	(10,000)	0	0	0	0	10,000	(10,002)	0	0	0	407,751
<b>Net Cash from Operating Activities</b>	<b>(22,417)</b>	<b>(594,430)</b>	<b>(102,250)</b>	<b>(204,036)</b>	<b>(260,967)</b>	<b>(203,881)</b>	<b>(204,509)</b>	<b>(204,425)</b>	<b>11,525</b>	<b>183,200</b>	<b>413,949</b>	<b>415,120</b>	<b>(773,122)</b>
<b><i>Cash Flows from Financing Activities</i></b>													
Capital purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Line of credit draws	0	0	0	0	0	50,000	220,000	220,000	10,000	0	0	0	500,000
Line of credit repayments	0	0	0	0	0	0	0	0	0	(150,000)	(350,000)	0	(500,000)
Principal payments on debt	(16,803)	(19,043)	(16,970)	(17,765)	(17,132)	(17,923)	(17,296)	(17,377)	(18,160)	(17,543)	(18,322)	(17,710)	(212,044)
<b>Net Cash from Financing Activities</b>	<b>(16,803)</b>	<b>(19,043)</b>	<b>(16,970)</b>	<b>(17,765)</b>	<b>(17,132)</b>	<b>32,077</b>	<b>202,704</b>	<b>202,623</b>	<b>(8,160)</b>	<b>(167,543)</b>	<b>(368,322)</b>	<b>(17,710)</b>	<b>(212,044)</b>
<b><i>Cash Flows from Investing Activities</i></b>													
Owners' contribution	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Cash	(39,220)	(613,473)	(119,220)	(221,801)	(278,099)	(171,804)	(1,805)	(1,802)	3,365	15,657	45,627	397,410	(985,166)
Beginning Cash	1,448,726	*****	796,033	676,813	455,011	176,913	5,108	3,303	1,500	4,865	20,523	66,150	1,448,726
<b>Ending Cash</b>	<b>1,409,506</b>	<b>796,033</b>	<b>676,813</b>	<b>455,011</b>	<b>176,913</b>	<b>5,108</b>	<b>3,303</b>	<b>1,500</b>	<b>4,865</b>	<b>20,523</b>	<b>66,150</b>	<b>463,560</b>	<b>463,560</b>

## Porcupine Pellet Plant Cash Flow Statement | December 31, 2016

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Net Income	(120,053)	(20,355)	(34,598)	(45,434)	(34,426)	(33,664)	(34,253)	1,993	47,806	76,710	89,800	92,092	(14,382)
<b><i>Cash Flows from Operating Activities</i></b>													
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Accounts receivable	(57,618)	410,000	164,000	82,000	(82,000)	0	0	(328,000)	(246,000)	(328,000)	0	0	(385,618)
Inventories	173,021	(178,964)	(319,759)	(390,155)	(319,758)	(319,758)	(319,759)	(38,170)	173,024	454,613	454,613	454,609	(176,443)
Accounts payable and accrued expenses	391,215	(156,250)	(10,250)	0	0	0	0	10,250	(10,251)	0	0	0	224,714
<b>Net Cash from Operating Activities</b>	<b>415,202</b>	<b>83,068</b>	<b>(171,970)</b>	<b>(324,952)</b>	<b>(407,547)</b>	<b>(324,785)</b>	<b>(325,375)</b>	<b>(325,290)</b>	<b>(6,784)</b>	<b>231,960</b>	<b>573,051</b>	<b>575,339</b>	<b>(8,083)</b>
<b><i>Cash Flows from Financing Activities</i></b>													
Capital purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Line of credit draws	0	0	0	0	50,000	340,000	350,000	340,000	30,000	0	0	0	1,110,000
Line of credit repayments	0	0	0	0	0	0	0	0	0	(210,000)	(550,000)	(350,000)	(1,110,000)
Principal payments on debt	(17,793)	(19,254)	(17,966)	(18,733)	(18,138)	(18,900)	(18,311)	(18,396)	(19,151)	(18,572)	(19,321)	(18,749)	(223,284)
<b>Net Cash from Financing Activities</b>	<b>(17,793)</b>	<b>(19,254)</b>	<b>(17,966)</b>	<b>(18,733)</b>	<b>31,862</b>	<b>321,100</b>	<b>331,689</b>	<b>321,604</b>	<b>10,849</b>	<b>(228,572)</b>	<b>(569,321)</b>	<b>(368,749)</b>	<b>(223,284)</b>
<b><i>Cash Flows from Investing Activities</i></b>													
Owners' contribution	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Cash	397,409	63,814	(189,936)	(343,685)	(375,685)	(3,685)	6,314	(3,686)	4,065	3,388	3,730	206,590	(231,367)
Beginning Cash	463,560	860,969	924,783	734,847	391,162	15,477	11,792	18,106	14,420	18,485	21,873	25,603	463,560
<b>Ending Cash</b>	<b>860,969</b>	<b>924,783</b>	<b>734,847</b>	<b>391,162</b>	<b>15,477</b>	<b>11,792</b>	<b>18,106</b>	<b>14,420</b>	<b>18,485</b>	<b>21,873</b>	<b>25,603</b>	<b>232,193</b>	<b>232,193</b>

## Porcupine Pellet Plant Cash Flow Statement | December 31, 2017

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Net Income	(45,711)	21,004	(6,888)	(32,267)	(6,707)	(13,824)	(6,524)	56,125	114,304	175,943	191,117	186,676	633,248
<i>Cash Flows from Operating Activities</i>													
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Accounts receivable	80,500	522,500	209,000	104,500	(104,500)	0	0	(418,000)	(313,500)	(418,000)	0	0	(337,500)
Inventories	230,432	(200,733)	(373,204)	(459,436)	(373,204)	(373,203)	(373,203)	(28,269)	230,433	575,369	575,370	575,371	5,723
Accounts payable and accrued expenses	283,291	(155,994)	(10,506)	0	0	0	0	10,506	(10,506)	0	0	(4)	116,787
<b>Net Cash from Operating Activities</b>	<b>577,149</b>	<b>215,414</b>	<b>(152,961)</b>	<b>(358,566)</b>	<b>(455,774)</b>	<b>(358,390)</b>	<b>(351,090)</b>	<b>(351,001)</b>	<b>49,368</b>	<b>361,949</b>	<b>795,125</b>	<b>790,681</b>	<b>761,904</b>
<i>Cash Flows from Financing Activities</i>													
Capital purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Line of credit draws	0	0	0	0	60,000	390,000	370,000	380,000	0	0	0	0	1,200,000
Line of credit repayments	0	0	0	0	0	0	0	0	0	(360,000)	(770,000)	(70,000)	(1,200,000)
Principal payments on debt	(18,836)	(20,889)	(19,022)	(19,759)	(19,203)	(19,936)	(19,385)	(19,477)	(20,201)	(19,662)	(20,381)	(19,849)	(236,600)
<b>Net Cash from Financing Activities</b>	<b>(18,836)</b>	<b>(20,889)</b>	<b>(19,022)</b>	<b>(19,759)</b>	<b>40,797</b>	<b>370,064</b>	<b>350,615</b>	<b>360,523</b>	<b>(20,201)</b>	<b>(379,662)</b>	<b>(790,381)</b>	<b>(89,849)</b>	<b>(236,600)</b>
<i>Cash Flows from Investing Activities</i>													
Owners' contribution	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Change in Cash</b>	<b>558,313</b>	<b>194,525</b>	<b>(171,983)</b>	<b>(378,325)</b>	<b>(414,977)</b>	<b>11,674</b>	<b>(475)</b>	<b>9,522</b>	<b>29,167</b>	<b>(17,713)</b>	<b>4,744</b>	<b>700,832</b>	<b>525,304</b>
Beginning Cash	232,193	790,506	985,031	813,048	434,723	19,746	31,420	30,945	40,467	69,634	51,921	56,665	232,193
<b>Ending Cash</b>	<b>790,506</b>	<b>985,031</b>	<b>813,048</b>	<b>434,723</b>	<b>19,746</b>	<b>31,420</b>	<b>30,945</b>	<b>40,467</b>	<b>69,634</b>	<b>51,921</b>	<b>56,665</b>	<b>757,497</b>	<b>757,497</b>



## Porcupine Pellet Plant Cash Flow Statement | December 31, 2018

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Net Income	(36,215)	25,957	(3,233)	(93,003)	(3,042)	(73,715)	(2,848)	62,887	60,280	200,179	206,825	136,397	480,469
<i>Cash Flows from Operating Activities</i>													
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Accounts receivable	396,000	532,500	213,000	106,500	(106,500)	0	0	(426,000)	(319,500)	(426,000)	0	0	(30,000)
Inventories	232,674	(204,317)	(379,112)	(466,510)	(379,112)	(379,112)	(379,112)	(29,521)	232,674	582,265	582,266	582,261	(4,656)
Accounts payable and accrued expenses	177,873	(155,731)	(10,769)	0	0	0	0	10,769	(10,769)	0	0	(5)	11,368
<b>Net Cash from Operating Activities</b>	<b>798,969</b>	<b>227,046</b>	<b>(151,477)</b>	<b>(424,376)</b>	<b>(460,017)</b>	<b>(424,190)</b>	<b>(353,323)</b>	<b>(353,228)</b>	<b>(8,678)</b>	<b>385,081</b>	<b>817,729</b>	<b>747,291</b>	<b>800,827</b>
<i>Cash Flows from Financing Activities</i>													
Capital purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Line of credit draws	0	0	0	0	0	0	230,000	370,000	40,000	0	0	0	640,000
Line of credit repayments	0	0	0	0	0	0	0	0	0	(360,000)	(280,000)	0	(640,000)
Principal payments on debt	(19,942)	(21,891)	(20,137)	(20,843)	(20,329)	(21,029)	(20,522)	(20,617)	(21,311)	(20,813)	(21,501)	(21,011)	(249,946)
<b>Net Cash from Financing Activities</b>	<b>(19,942)</b>	<b>(21,891)</b>	<b>(20,137)</b>	<b>(20,843)</b>	<b>(20,329)</b>	<b>(21,029)</b>	<b>209,478</b>	<b>349,383</b>	<b>18,689</b>	<b>(380,813)</b>	<b>(301,501)</b>	<b>(21,011)</b>	<b>(249,946)</b>
<i>Cash Flows from Investing Activities</i>													
Owners' contribution	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Cash	779,027	205,155	(171,614)	(445,219)	(480,346)	(445,219)	(143,845)	(3,845)	10,011	4,268	516,228	726,280	550,881
Beginning Cash	757,497	1,536,524	1,741,679	1,570,065	1,124,846	644,500	199,281	55,436	51,591	61,602	65,870	582,098	757,497
<b>Ending Cash</b>	<b>1,536,524</b>	<b>1,741,679</b>	<b>1,570,065</b>	<b>1,124,846</b>	<b>644,500</b>	<b>199,281</b>	<b>55,436</b>	<b>51,591</b>	<b>61,602</b>	<b>65,870</b>	<b>582,098</b>	<b>1,308,378</b>	<b>1,308,378</b>

## Porcupine Pellet Plant Cash Flow Statement | December 31, 2019

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Net Income	(27,050)	30,735	330	(99,201)	532	(79,100)	738	69,417	60,526	219,089	220,642	139,889	536,547
<i>Cash Flows from Operating Activities</i>													
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Accounts receivable	404,000	542,500	217,000	108,500	(108,500)	0	0	(434,000)	(325,500)	(434,000)	0	0	(30,000)
Inventories	235,857	(207,123)	(384,318)	(472,912)	(384,316)	(384,317)	(384,318)	(29,934)	235,857	590,242	590,241	590,247	(4,794)
Accounts payable and accrued expenses	177,325	(155,462)	(11,038)	0	0	0	(2)	11,038	(11,038)	0	0	4	10,827
<b>Net Cash from Operating Activities</b>	<b>818,769</b>	<b>239,287</b>	<b>(149,389)</b>	<b>(434,976)</b>	<b>(463,647)</b>	<b>(434,780)</b>	<b>(354,945)</b>	<b>(354,842)</b>	<b>(11,518)</b>	<b>403,968</b>	<b>839,521</b>	<b>758,778</b>	<b>856,226</b>
<i>Cash Flows from Financing Activities</i>													
Capital purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Line of credit draws	0	0	0	0	0	0	0	70,000	40,000	0	0	0	110,000
Line of credit repayments	0	0	0	0	0	0	0	0	0	(110,000)	0	0	(110,000)
Principal payments on debt	(21,109)	(22,951)	(21,315)	(21,989)	(21,517)	(22,185)	(21,722)	(21,822)	(22,483)	(22,030)	(22,684)	(22,238)	(264,045)
<b>Net Cash from Financing Activities</b>	<b>(21,109)</b>	<b>(22,951)</b>	<b>(21,315)</b>	<b>(21,989)</b>	<b>(21,517)</b>	<b>(22,185)</b>	<b>(21,722)</b>	<b>48,178</b>	<b>17,517</b>	<b>(132,030)</b>	<b>(22,684)</b>	<b>(22,238)</b>	<b>(264,045)</b>
<i>Cash Flows from Investing Activities</i>													
Owners' contribution	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Cash	797,660	216,336	(170,704)	(456,965)	(485,164)	(456,965)	(376,667)	(306,664)	5,999	271,938	816,837	736,540	592,181
Beginning Cash	1,308,378	2,106,038	2,322,374	2,151,670	1,694,705	1,209,541	752,576	375,909	69,245	75,244	347,182	1,164,019	1,308,378
<b>Ending Cash</b>	<b>2,106,038</b>	<b>2,322,374</b>	<b>2,151,670</b>	<b>1,694,705</b>	<b>1,209,541</b>	<b>752,576</b>	<b>375,909</b>	<b>69,245</b>	<b>75,244</b>	<b>347,182</b>	<b>1,164,019</b>	<b>1,900,559</b>	<b>1,900,559</b>

## INCOME STATEMENTS

### Porcupine Pellet Plant Income Statement | December 31, 2015

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
	11%	6%	4%	3%	4%	4%	4%	8%	11%	15%	15%	15%	
<b>Gross Sales</b>													
Pellet revenue	\$ 0	\$ 337,753	\$ 225,169	\$ 168,876	\$ 225,169	\$ 225,169	\$ 225,169	\$ 450,337	\$ 619,213	\$ 844,382	\$ 844,382	\$ 844,382	\$ 5,010,000
<b>Gross Sales from Operations</b>	<b>\$ 0</b>	<b>\$ 337,753</b>	<b>\$ 225,169</b>	<b>\$ 168,876</b>	<b>\$ 225,169</b>	<b>\$ 225,169</b>	<b>\$ 225,169</b>	<b>\$ 450,337</b>	<b>\$ 619,213</b>	<b>\$ 844,382</b>	<b>\$ 844,382</b>	<b>\$ 844,382</b>	<b>\$ 5,010,000</b>
<b>Cost of Sales</b>													
Feedstock	\$ 0	\$ 141,573	\$ 94,382	\$ 70,787	\$ 94,382	\$ 94,382	\$ 94,382	\$ 188,764	\$ 259,551	\$ 353,933	\$ 353,933	\$ 353,931	\$ 2,100,000
Dryer fuel	0	14,157	9,438	7,079	9,438	9,438	9,438	18,876	25,955	35,393	35,393	35,395	210,000
Direct labor salary & benefits	0	29,173	19,449	14,587	19,449	19,449	19,449	38,898	53,485	72,934	72,934	72,933	432,740
Feedstock procurement, electricity, services, & rentals	0	64,238	42,826	32,119	42,826	42,826	42,826	85,651	117,770	160,596	160,596	160,596	952,870
Supplies expense	0	37,416	24,944	18,708	24,944	24,944	24,944	49,888	68,596	93,539	93,539	93,538	555,000
Parts & maintenance	0	7,065	4,710	3,533	4,710	4,710	4,710	9,420	12,953	17,663	17,663	17,663	104,800
<b>Total Cost of Sales</b>	<b>\$ 0</b>	<b>\$ 293,622</b>	<b>\$ 195,749</b>	<b>\$ 146,813</b>	<b>\$ 195,749</b>	<b>\$ 195,749</b>	<b>\$ 195,749</b>	<b>\$ 391,497</b>	<b>\$ 538,310</b>	<b>\$ 734,058</b>	<b>\$ 734,058</b>	<b>\$ 734,056</b>	<b>\$ 4,355,410</b>
<b>Gross Profit</b>	<b>\$ 0</b>	<b>\$ 44,131</b>	<b>\$ 29,420</b>	<b>\$ 22,063</b>	<b>\$ 29,420</b>	<b>\$ 29,420</b>	<b>\$ 29,420</b>	<b>\$ 58,840</b>	<b>\$ 80,903</b>	<b>\$ 110,324</b>	<b>\$ 110,324</b>	<b>\$ 110,326</b>	<b>\$ 654,590</b>
<b>Administrative Costs</b>													
Administrative salary & benefits	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,116	\$ 26,116	\$ 26,116	\$ 26,116	\$ 313,400
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Insurance	166,500	0	0	0	0	0	0	0	0	0	0	0	166,500
Real estate taxes	0	10,000	0	0	0	0	0	10,000	0	0	0	0	20,000
Other professional fees	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,166	4,166	4,166	4,166	50,000
<b>Total Administrative Costs</b>	<b>\$ 225,421</b>	<b>\$ 68,921</b>	<b>\$ 58,921</b>	<b>\$ 58,921</b>	<b>\$ 58,921</b>	<b>\$ 58,921</b>	<b>\$ 58,921</b>	<b>\$ 68,921</b>	<b>\$ 58,919</b>	<b>\$ 58,919</b>	<b>\$ 58,920</b>	<b>\$ 58,920</b>	<b>\$ 893,546</b>
<b>EARNINGS BEFORE INTEREST AND TAXES</b>	<b>\$ (225,421)</b>	<b>\$ (24,790)</b>	<b>\$ (29,501)</b>	<b>\$ (36,858)</b>	<b>\$ (29,501)</b>	<b>\$ (29,501)</b>	<b>\$ (29,501)</b>	<b>\$ (10,081)</b>	<b>\$ 21,984</b>	<b>\$ 51,405</b>	<b>\$ 51,404</b>	<b>\$ 51,406</b>	<b>\$ (238,956)</b>
Interest	22,417	20,177	22,250	21,455	22,088	21,298	21,924	21,843	21,060	28,262	22,682	21,509	266,965
<b>EARNINGS BEFORE TAXES</b>	<b>\$ (247,838)</b>	<b>\$ (44,967)</b>	<b>\$ (51,751)</b>	<b>\$ (58,313)</b>	<b>\$ (51,589)</b>	<b>\$ (50,799)</b>	<b>\$ (51,425)</b>	<b>\$ (31,924)</b>	<b>\$ 924</b>	<b>\$ 23,143</b>	<b>\$ 28,722</b>	<b>\$ 29,897</b>	<b>\$ (505,921)</b>
Income taxes	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>NET INCOME</b>	<b>\$ (247,838)</b>	<b>\$ (44,967)</b>	<b>\$ (51,751)</b>	<b>\$ (58,313)</b>	<b>\$ (51,589)</b>	<b>\$ (50,799)</b>	<b>\$ (51,425)</b>	<b>\$ (31,924)</b>	<b>\$ 924</b>	<b>\$ 23,143</b>	<b>\$ 28,722</b>	<b>\$ 29,897</b>	<b>\$ (505,921)</b>



## Porcupine Pellet Plant Income Statement | December 31, 2016

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
	11%	6%	4%	3%	4%	4%	4%	8%	11%	15%	15%	15%	
<b>Gross Sales</b>													
Pellet revenue	\$ 902,000	\$ 492,000	\$ 328,000	\$ 246,000	\$ 328,000	\$ 328,000	\$ 328,000	\$ 656,000	\$ 902,000	\$ 1,230,000	\$ 1,230,000	\$ 1,230,000	\$ 8,200,000
<b>Gross Sales from Operations</b>	<b>\$ 902,000</b>	<b>\$ 492,000</b>	<b>\$ 328,000</b>	<b>\$ 246,000</b>	<b>\$ 328,000</b>	<b>\$ 328,000</b>	<b>\$ 328,000</b>	<b>\$ 656,000</b>	<b>\$ 902,000</b>	<b>\$ 1,230,000</b>	<b>\$ 1,230,000</b>	<b>\$ 1,230,000</b>	<b>\$ 8,200,000</b>
<b>Cost of Sales</b>													
Feedstock	\$ 369,600	\$ 201,600	\$ 134,400	\$ 100,800	\$ 134,400	\$ 134,400	\$ 134,400	\$ 268,800	\$ 369,600	\$ 504,000	\$ 504,000	\$ 504,000	\$ 3,360,000
Dryer fuel	38,500	21,000	14,000	10,500	14,000	14,000	14,000	28,000	38,500	52,500	52,500	52,500	350,000
Direct labor salary & benefits	76,049	41,481	27,654	20,741	27,654	27,654	27,654	55,308	76,049	103,703	103,703	103,700	691,350
services, & rentals	170,697	93,107	62,072	46,554	62,072	62,072	62,072	124,143	170,697	232,769	232,769	232,767	1,551,791
Supplies expense	101,200	55,200	36,800	27,600	36,800	36,800	36,800	73,600	101,200	138,000	138,000	138,000	920,000
Parts & maintenance	18,326	9,996	6,664	4,998	6,664	6,664	6,664	13,328	18,326	24,990	24,990	24,990	166,600
<b>Total Cost of Sales</b>	<b>\$ 774,372</b>	<b>\$ 422,384</b>	<b>\$ 281,590</b>	<b>\$ 211,193</b>	<b>\$ 281,590</b>	<b>\$ 281,590</b>	<b>\$ 281,590</b>	<b>\$ 563,179</b>	<b>\$ 774,372</b>	<b>\$ 1,055,961</b>	<b>\$ 1,055,962</b>	<b>\$ 1,055,957</b>	<b>\$ 7,039,741</b>
<b>Gross Profit</b>	<b>\$ 127,628</b>	<b>\$ 69,616</b>	<b>\$ 46,410</b>	<b>\$ 34,807</b>	<b>\$ 46,410</b>	<b>\$ 46,410</b>	<b>\$ 46,410</b>	<b>\$ 92,821</b>	<b>\$ 127,628</b>	<b>\$ 174,038</b>	<b>\$ 174,038</b>	<b>\$ 174,043</b>	<b>\$ 1,160,259</b>
<b>Administrative Costs</b>													
Administrative salary & benefits	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,116	\$ 26,116	\$ 26,116	\$ 26,116	\$ 313,400
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Insurance	166,500	0	0	0	0	0	0	0	0	0	0	0	166,500
Real estate taxes	0	10,250	0	0	0	0	0	10,250	0	0	0	0	20,500
Other professional fees	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
<b>Total Administrative Costs</b>	<b>\$ 226,254</b>	<b>\$ 70,004</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 70,004</b>	<b>\$ 59,753</b>	<b>\$ 59,753</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 904,046</b>
<b>EARNINGS BEFORE INTEREST AND TAXES</b>	<b>\$ (98,626)</b>	<b>\$ (388)</b>	<b>\$ (13,344)</b>	<b>\$ (24,947)</b>	<b>\$ (13,344)</b>	<b>\$ (13,344)</b>	<b>\$ (13,344)</b>	<b>\$ 22,817</b>	<b>\$ 67,875</b>	<b>\$ 114,285</b>	<b>\$ 114,284</b>	<b>\$ 114,289</b>	<b>\$ 256,213</b>
Interest	21,427	19,967	21,254	20,487	21,082	20,320	20,909	20,824	20,069	37,573	24,484	22,197	270,595
<b>EARNINGS BEFORE TAXES</b>	<b>\$ (120,053)</b>	<b>\$ (20,355)</b>	<b>\$ (34,598)</b>	<b>\$ (45,434)</b>	<b>\$ (34,426)</b>	<b>\$ (33,664)</b>	<b>\$ (34,253)</b>	<b>\$ 1,993</b>	<b>\$ 47,806</b>	<b>\$ 76,710</b>	<b>\$ 89,800</b>	<b>\$ 92,092</b>	<b>\$ (14,382)</b>
Income taxes	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>NET INCOME</b>	<b>\$ (120,053)</b>	<b>\$ (20,355)</b>	<b>\$ (34,598)</b>	<b>\$ (45,434)</b>	<b>\$ (34,426)</b>	<b>\$ (33,664)</b>	<b>\$ (34,253)</b>	<b>\$ 1,993</b>	<b>\$ 47,806</b>	<b>\$ 76,710</b>	<b>\$ 89,800</b>	<b>\$ 92,092</b>	<b>\$ (14,382)</b>

## Porcupine Pellet Plant Income Statement | December 31, 2017

	JAN 11%	FEB 6%	MAR 4%	APR 3%	MAY 4%	JUN 4%	JUL 4%	AUG 8%	SEP 11%	OCT 15%	NOV 15%	DEC 15%	TOTAL
<b>Gross Sales</b>													
Pellet revenue	\$ 1,149,500	\$ 627,000	\$ 418,000	\$ 313,500	\$ 418,000	\$ 418,000	\$ 418,000	\$ 836,000	\$ 1,149,500	\$ 1,567,500	\$ 1,567,500	\$ 1,567,500	\$ 10,450,000
<b>Gross Sales from Operations</b>	<b>\$ 1,149,500</b>	<b>\$ 627,000</b>	<b>\$ 418,000</b>	<b>\$ 313,500</b>	<b>\$ 418,000</b>	<b>\$ 418,000</b>	<b>\$ 418,000</b>	<b>\$ 836,000</b>	<b>\$ 1,149,500</b>	<b>\$ 1,567,500</b>	<b>\$ 1,567,500</b>	<b>\$ 1,567,500</b>	<b>\$ 10,450,000</b>
<b>Cost of Sales</b>													
Feedstock	\$ 462,000	\$ 252,000	\$ 168,000	\$ 126,000	\$ 168,000	\$ 168,000	\$ 168,000	\$ 336,000	\$ 462,000	\$ 630,000	\$ 630,000	\$ 630,000	\$ 4,200,000
Dryer fuel	46,200	25,200	16,800	12,600	16,800	16,800	16,800	33,600	46,200	63,000	63,000	63,000	420,000
Direct labor salary & benefits	81,180	44,280	29,520	22,140	29,520	29,520	29,520	59,040	81,180	110,700	110,700	110,700	738,000
services, & rentals	209,637	114,348	76,232	57,174	76,232	76,232	76,232	152,463	209,637	285,869	285,869	285,868	1,905,793
Supplies expense	126,500	69,000	46,000	34,500	46,000	46,000	46,000	92,000	126,500	172,500	172,500	172,500	1,150,000
Parts & maintenance	23,056	12,576	8,384	6,288	8,384	8,384	8,384	16,768	23,056	31,440	31,440	31,440	209,600
<b>Total Cost of Sales</b>	<b>\$ 948,573</b>	<b>\$ 517,404</b>	<b>\$ 344,936</b>	<b>\$ 258,702</b>	<b>\$ 344,936</b>	<b>\$ 344,936</b>	<b>\$ 344,936</b>	<b>\$ 689,871</b>	<b>\$ 948,573</b>	<b>\$ 1,293,509</b>	<b>\$ 1,293,509</b>	<b>\$ 1,293,508</b>	<b>\$ 8,623,393</b>
<b>Gross Profit</b>	<b>\$ 200,927</b>	<b>\$ 109,596</b>	<b>\$ 73,064</b>	<b>\$ 54,798</b>	<b>\$ 73,064</b>	<b>\$ 73,064</b>	<b>\$ 73,064</b>	<b>\$ 146,129</b>	<b>\$ 200,927</b>	<b>\$ 273,991</b>	<b>\$ 273,991</b>	<b>\$ 273,992</b>	<b>\$ 1,826,607</b>
<b>Administrative Costs</b>													
Administrative salary & benefits	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,117	\$ 26,113	\$ 313,400
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Insurance	166,500	0	0	0	0	0	0	0	0	0	0	0	166,500
Real estate taxes	0	10,506	0	0	0	0	0	10,506	0	0	0	0	21,012
Other professional fees	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
<b>Total Administrative Costs</b>	<b>\$ 226,254</b>	<b>\$ 70,260</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 70,260</b>	<b>\$ 59,754</b>	<b>\$ 59,754</b>	<b>\$ 59,755</b>	<b>\$ 59,751</b>	<b>\$ 904,558</b>
<b>EARNINGS BEFORE INTEREST AND TAXES</b>	<b>\$ (25,327)</b>	<b>\$ 39,336</b>	<b>\$ 13,310</b>	<b>\$ (4,956)</b>	<b>\$ 13,310</b>	<b>\$ 13,310</b>	<b>\$ 13,310</b>	<b>\$ 75,869</b>	<b>\$ 141,173</b>	<b>\$ 214,237</b>	<b>\$ 214,236</b>	<b>\$ 214,242</b>	<b>\$ 922,050</b>
Interest	20,384	18,332	20,198	19,461	20,017	19,284	19,834	19,744	19,019	38,294	23,119	19,716	257,402
<b>EARNINGS BEFORE TAXES</b>	<b>\$ (45,711)</b>	<b>\$ 21,004</b>	<b>\$ (6,888)</b>	<b>\$ (24,417)</b>	<b>\$ (6,707)</b>	<b>\$ (5,974)</b>	<b>\$ (6,524)</b>	<b>\$ 56,125</b>	<b>\$ 122,154</b>	<b>\$ 175,943</b>	<b>\$ 191,117</b>	<b>\$ 194,526</b>	<b>\$ 664,648</b>
Income taxes	0	0	0	7,850	0	7,850	0	0	7,850	0	0	7,850	31,400
<b>NET INCOME</b>	<b>\$ (45,711)</b>	<b>\$ 21,004</b>	<b>\$ (6,888)</b>	<b>\$ (32,267)</b>	<b>\$ (6,707)</b>	<b>\$ (13,824)</b>	<b>\$ (6,524)</b>	<b>\$ 56,125</b>	<b>\$ 114,304</b>	<b>\$ 175,943</b>	<b>\$ 191,117</b>	<b>\$ 186,676</b>	<b>\$ 633,248</b>

## Porcupine Pellet Plant Income Statement | December 31, 2018

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
	11%	6%	4%	3%	4%	4%	4%	8%	11%	15%	15%	15%	
<b>Gross Sales</b>													
Pellet revenue	\$ 1,171,500	\$ 639,000	\$ 426,000	\$ 319,500	\$ 426,000	\$ 426,000	\$ 426,000	\$ 852,000	\$ 1,171,500	\$ 1,597,500	\$ 1,597,500	\$ 1,597,500	\$ 10,650,000
<b>Gross Sales from Operations</b>	<b>\$ 1,171,500</b>	<b>\$ 639,000</b>	<b>\$ 426,000</b>	<b>\$ 319,500</b>	<b>\$ 426,000</b>	<b>\$ 426,000</b>	<b>\$ 426,000</b>	<b>\$ 852,000</b>	<b>\$ 1,171,500</b>	<b>\$ 1,597,500</b>	<b>\$ 1,597,500</b>	<b>\$ 1,597,500</b>	<b>\$ 10,650,000</b>
<b>Cost of Sales</b>													
Feedstock	\$ 462,000	\$ 252,000	\$ 168,000	\$ 126,000	\$ 168,000	\$ 168,000	\$ 168,000	\$ 336,000	\$ 462,000	\$ 630,000	\$ 630,000	\$ 630,000	\$ 4,200,000
Dryer fuel	46,200	25,200	16,800	12,600	16,800	16,800	16,800	33,600	46,200	63,000	63,000	63,000	420,000
Direct labor salary & benefits	83,210	45,387	30,258	22,694	30,258	30,258	30,258	60,516	83,210	113,468	113,468	113,465	756,450
services, & rentals	215,926	117,778	78,519	58,889	78,519	78,519	78,519	157,037	215,926	294,445	294,445	294,445	1,962,967
Supplies expense	130,295	71,070	47,380	35,535	47,380	47,380	47,380	94,760	130,295	177,675	177,675	177,675	1,184,500
Parts & maintenance	23,748	12,953	8,636	6,477	8,636	8,636	8,636	17,271	23,748	32,383	32,383	32,381	215,888
<b>Total Cost of Sales</b>	<b>\$ 961,379</b>	<b>\$ 524,388</b>	<b>\$ 349,593</b>	<b>\$ 262,195</b>	<b>\$ 349,593</b>	<b>\$ 349,593</b>	<b>\$ 349,593</b>	<b>\$ 699,184</b>	<b>\$ 961,379</b>	<b>\$ 1,310,971</b>	<b>\$ 1,310,971</b>	<b>\$ 1,310,966</b>	<b>\$ 8,739,805</b>
<b>Gross Profit</b>	<b>\$ 210,121</b>	<b>\$ 114,612</b>	<b>\$ 76,407</b>	<b>\$ 57,305</b>	<b>\$ 76,407</b>	<b>\$ 76,407</b>	<b>\$ 76,407</b>	<b>\$ 152,816</b>	<b>\$ 210,121</b>	<b>\$ 286,529</b>	<b>\$ 286,529</b>	<b>\$ 286,534</b>	<b>\$ 1,910,195</b>
<b>Administrative Costs</b>													
Administrative salary & benefits	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,770	\$ 26,765	\$ 321,235
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Insurance	166,500	0	0	0	0	0	0	0	0	0	0	0	166,500
Real estate taxes	0	10,769	0	0	0	0	0	10,769	0	0	0	0	21,538
Other professional fees	5,150	5,150	5,150	5,150	5,150	5,150	5,150	5,150	5,150	5,150	5,150	5,150	61,800
<b>Total Administrative Costs</b>	<b>\$ 227,057</b>	<b>\$ 71,326</b>	<b>\$ 60,557</b>	<b>\$ 60,557</b>	<b>\$ 60,557</b>	<b>\$ 60,557</b>	<b>\$ 60,557</b>	<b>\$ 71,326</b>	<b>\$ 60,557</b>	<b>\$ 60,557</b>	<b>\$ 60,558</b>	<b>\$ 60,553</b>	<b>\$ 914,719</b>
<b>EARNINGS BEFORE INTEREST AND TAXES</b>	<b>\$ (16,936)</b>	<b>\$ 43,286</b>	<b>\$ 15,850</b>	<b>\$ (3,252)</b>	<b>\$ 15,850</b>	<b>\$ 15,850</b>	<b>\$ 15,850</b>	<b>\$ 81,490</b>	<b>\$ 149,564</b>	<b>\$ 225,972</b>	<b>\$ 225,971</b>	<b>\$ 225,981</b>	<b>\$ 995,476</b>
Interest	19,279	17,329	19,683	18,376	18,892	18,190	18,658	18,603	17,909	25,793	19,146	18,209	229,507
<b>EARNINGS BEFORE TAXES</b>	<b>\$ (36,215)</b>	<b>\$ 25,957</b>	<b>\$ (3,233)</b>	<b>\$ (21,628)</b>	<b>\$ (3,042)</b>	<b>\$ (2,340)</b>	<b>\$ (2,848)</b>	<b>\$ 62,887</b>	<b>\$ 131,655</b>	<b>\$ 200,179</b>	<b>\$ 206,825</b>	<b>\$ 207,772</b>	<b>\$ 765,969</b>
Income taxes	0	0	0	71,375	0	71,375	0	0	71,375	0	0	71,375	285,500
<b>NET INCOME</b>	<b>\$ (36,215)</b>	<b>\$ 25,957</b>	<b>\$ (3,233)</b>	<b>\$ (93,003)</b>	<b>\$ (3,042)</b>	<b>\$ (73,715)</b>	<b>\$ (2,848)</b>	<b>\$ 62,887</b>	<b>\$ 60,280</b>	<b>\$ 200,179</b>	<b>\$ 206,825</b>	<b>\$ 136,397</b>	<b>\$ 480,469</b>

## Porcupine Pellet Plant Income Statement | December 31, 2019

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
	11%	6%	4%	3%	4%	4%	4%	8%	11%	15%	15%	15%	
<b>Gross Sales</b>													
Pellet revenue	\$ 1,193,500	\$ 651,000	\$ 434,000	\$ 325,500	\$ 434,000	\$ 434,000	\$ 434,000	\$ 868,000	\$ 1,193,500	\$ 1,627,500	\$ 1,627,500	\$ 1,627,500	\$ 10,850,000
<b>Gross Sales from Operations</b>	<b>\$ 1,193,500</b>	<b>\$ 651,000</b>	<b>\$ 434,000</b>	<b>\$ 325,500</b>	<b>\$ 434,000</b>	<b>\$ 434,000</b>	<b>\$ 434,000</b>	<b>\$ 868,000</b>	<b>\$ 1,193,500</b>	<b>\$ 1,627,500</b>	<b>\$ 1,627,500</b>	<b>\$ 1,627,500</b>	<b>\$ 10,850,000</b>
<b>Cost of Sales</b>													
Feedstock	\$ 462,000	\$ 252,000	\$ 168,000	\$ 126,000	\$ 168,000	\$ 168,000	\$ 168,000	\$ 336,000	\$ 462,000	\$ 630,000	\$ 630,000	\$ 630,000	\$ 4,200,000
Dryer fuel	46,200	25,200	16,800	12,600	16,800	16,800	16,800	33,600	46,200	63,000	63,000	63,000	420,000
Direct labor salary & benefits	85,290	46,522	31,014	23,261	31,014	31,014	31,014	62,029	85,290	116,304	116,304	116,305	775,361
services, & rentals	222,404	121,311	80,874	60,656	80,874	80,874	80,874	161,748	222,404	303,278	303,278	303,281	2,021,856
Supplies expense	134,204	73,202	48,801	36,601	48,801	48,801	48,801	97,603	134,204	183,005	183,005	183,007	1,220,035
Parts & maintenance	24,460	13,342	8,895	6,671	8,895	8,895	8,895	17,789	24,460	33,355	33,355	33,353	222,365
<b>Total Cost of Sales</b>	<b>\$ 974,558</b>	<b>\$ 531,577</b>	<b>\$ 354,384</b>	<b>\$ 265,789</b>	<b>\$ 354,384</b>	<b>\$ 354,384</b>	<b>\$ 354,384</b>	<b>\$ 708,769</b>	<b>\$ 974,558</b>	<b>\$ 1,328,942</b>	<b>\$ 1,328,942</b>	<b>\$ 1,328,946</b>	<b>\$ 8,859,617</b>
<b>Gross Profit</b>	<b>\$ 218,942</b>	<b>\$ 119,423</b>	<b>\$ 79,616</b>	<b>\$ 59,711</b>	<b>\$ 79,616</b>	<b>\$ 79,616</b>	<b>\$ 79,616</b>	<b>\$ 159,231</b>	<b>\$ 218,942</b>	<b>\$ 298,558</b>	<b>\$ 298,558</b>	<b>\$ 298,554</b>	<b>\$ 1,990,383</b>
<b>Administrative Costs</b>													
Administrative salary & benefits	\$ 27,439	\$ 27,439	\$ 27,439	\$ 27,439	\$ 27,439	\$ 27,439	\$ 27,438	\$ 27,438	\$ 27,438	\$ 27,438	\$ 27,438	\$ 27,442	\$ 329,266
Depreciation - equipment	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,637	28,638	28,638	343,646
Insurance	166,500	0	0	0	0	0	0	0	0	0	0	0	166,500
Real estate taxes	0	11,038	0	0	0	0	0	11,038	0	0	0	0	22,076
Other professional fees	5,305	5,305	5,305	5,305	5,305	5,305	5,304	5,304	5,304	5,304	5,304	5,304	63,654
<b>Total Administrative Costs</b>	<b>\$ 227,881</b>	<b>\$ 72,419</b>	<b>\$ 61,381</b>	<b>\$ 61,381</b>	<b>\$ 61,381</b>	<b>\$ 61,381</b>	<b>\$ 61,379</b>	<b>\$ 72,417</b>	<b>\$ 61,379</b>	<b>\$ 61,379</b>	<b>\$ 61,380</b>	<b>\$ 61,384</b>	<b>\$ 925,142</b>
<b>EARNINGS BEFORE INTEREST AND TAXES</b>	<b>\$ (8,939)</b>	<b>\$ 47,004</b>	<b>\$ 18,235</b>	<b>\$ (1,670)</b>	<b>\$ 18,235</b>	<b>\$ 18,235</b>	<b>\$ 18,237</b>	<b>\$ 86,814</b>	<b>\$ 157,563</b>	<b>\$ 237,179</b>	<b>\$ 237,178</b>	<b>\$ 237,170</b>	<b>\$ 1,065,241</b>
Interest	18,111	16,269	17,905	17,231	17,703	17,035	17,499	17,397	16,737	18,090	16,536	16,981	207,494
<b>EARNINGS BEFORE TAXES</b>	<b>\$ (27,050)</b>	<b>\$ 30,735</b>	<b>\$ 330</b>	<b>\$ (18,901)</b>	<b>\$ 532</b>	<b>\$ 1,200</b>	<b>\$ 738</b>	<b>\$ 69,417</b>	<b>\$ 140,826</b>	<b>\$ 219,089</b>	<b>\$ 220,642</b>	<b>\$ 220,189</b>	<b>\$ 857,747</b>
Income taxes	0	0	0	80,300	0	80,300	0	0	80,300	0	0	80,300	321,200
<b>NET INCOME</b>	<b>\$ (27,050)</b>	<b>\$ 30,735</b>	<b>\$ 330</b>	<b>\$ (99,201)</b>	<b>\$ 532</b>	<b>\$ (79,100)</b>	<b>\$ 738</b>	<b>\$ 69,417</b>	<b>\$ 60,526</b>	<b>\$ 219,089</b>	<b>\$ 220,642</b>	<b>\$ 139,889</b>	<b>\$ 536,547</b>

## PRODUCTION SCHEDULE

Porcupine Pellet Plant													
Production Schedule in Tons													
December 31, 2016													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
PRODUCTION TONS-2015	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	31,200
SOLD TONS	0	-2,022	-1,348	-1,011	-1,348	-1,348	-1,348	-2,697	-3,710	-5,056	-5,056	-5,056	-30,000
REMAINING TONS	2,600	3,178	4,430	6,019	7,271	8,523	9,775	9,678	8,568	6,112	3,656	1,200	
PRODUCTION TONS-2016	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	49,200
SOLD TONS	-5,280	-2,880	-1,920	-1,440	-1,920	-1,920	-1,920	-3,840	-5,280	-7,200	-7,200	-7,200	-48,000
REMAINING TONS	20	1,240	3,420	6,080	8,260	10,440	12,620	12,880	11,700	8,600	5,500	2,400	
PRODUCTION TONS-2017	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
SOLD TONS	-6,600	-3,600	-2,400	-1,800	-2,400	-2,400	-2,400	-4,800	-6,600	-9,000	-9,000	-9,000	-60,000
REMAINING TONS	800	2,200	4,800	8,000	10,600	13,200	15,800	16,000	14,400	10,400	6,400	2,400	
PRODUCTION TONS-2018	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
SOLD TONS	-6,600	-3,600	-2,400	-1,800	-2,400	-2,400	-2,400	-4,800	-6,600	-9,000	-9,000	-9,000	-60,000
REMAINING TONS	800	2,200	4,800	8,000	10,600	13,200	15,800	16,000	14,400	10,400	6,400	2,400	

**DEPRECIATION SCHEDULE**

PORCUPINE PELLET PLANT  
DEPRECIATION SCHEDULE | APPLIED TO ALL YEARS EXCEPT CONSTRUCTION

DESCRIPTION	DATE IN SVC	METHOD	LIFE	COST	ANNUAL DEPREC
LAND	1/1/2015 0:00			20,000	0
<b>TOTAL LAND</b>					
BUILDING	1/1/2015 0:00	S/L	39	500,000	12,821
BUILDING IMPROVMENTS	1/1/2015 0:00	S/L	39	272,640	6,991
ENGINEERING/PERMITS	1/1/2015 0:00	S/L	39	37,500	962
<b>TOTAL BUILDING</b>				<b>810,140</b>	<b>20,773</b>
DIGITAL TRUCK SCALE	1/1/2015 0:00	S/L	15	120,000	8,000
INSTRUMENTATION	1/1/2015 0:00	S/L	10	66,000	6,600
HANDLING EQUIPMENT	1/1/2015 0:00	S/L	7	73,404	10,486
RAW MATERIAL HANDLING EQUIP	1/1/2015 0:00	S/L	10	876,510	87,651
DRYING EQUIPMENT	1/1/2015 0:00	S/L	15	477,613	31,841
BIOMASS FUEL STORAGE	1/1/2015 0:00	S/L	15	12,000	800
DRY RAY MATERIAL EQUIPMENT	1/1/2015 0:00	S/L	10	181,848	18,185
PELLETING EQUIPMENT	1/1/2015 0:00	S/L	10	857,630	85,763
COOLING, SCREENING	1/1/2015 0:00	S/L	15	269,227	17,948
PELLET BULK STORAGE	1/1/2015 0:00	S/L	15	5,000	333
BAGGING EQUIPMENT	1/1/2015 0:00	S/L	10	136,500	13,650
OFFICE EQUIPMENT	1/1/2015 0:00	S/L	5	14,500	2,900
ENGINEERING/PERMITS	1/1/2015 0:00	S/L	15	337,820	22,521
<b>TOTAL EQUIPMENT</b>				<b>3,428,052</b>	<b>306,679</b>
ADMIN - SALARY AND BENEFITS	1/1/2015 0:00	S/L	15	156,700	10,447
CAPITALIZED INTEREST	1/1/2015 0:00	S/L	15	86,206	5,747
<b>TOTAL STARTUP COSTS</b>				<b>242,906</b>	<b>16,194</b>
<b>TOTAL CAPITALIZED COSTS</b>				<b>4,501,098</b>	<b>343,646</b>

## LOAN AMORTIZATION

### PORCUPINE PELLET PLANT LOAN AMORTIZATION | 31-Dec-14

		PAYMENT	INTEREST	PRINCIPAL	BALANCE
ASSUME \$1,500,000 EQUITY FROM OWNERS					0
CONSTRUCTION LOAN (5.5% FOR ONE YEAR - NO PAY YEAR ONE)					
1-Apr-14	NEW LOAN			-50,000	50,000
1-Jul-14			686	-2,350,000	2,400,000
1-Oct-14			33,271	-967,000	3,367,000
1-Dec-14			30,949	-1,345,000	4,712,000
31-Dec-14			21,301		4,712,000
		<b>0</b>	<b>86,206</b>	<b>-4,712,000</b>	
<b>TERM LOAN (5.5% OVER LIFE OF LOAN - 15 YEAR AMORTIZATION)</b>					
31-Dec-14	NEW LOAN				4,799,000
31-Dec-14	PAY'T (ACCRUED INT)	86,206	86,206	0	4,799,000
31-Jan-15	PAYMENT	39,220	22,417	16,803	4,782,197
28-Feb-15	PAYMENT	39,220	20,177	19,043	4,763,154
31-Mar-15	PAYMENT	39,220	22,250	16,970	4,746,184
30-Apr-15	PAYMENT	39,220	21,455	17,765	4,728,419
31-May-15	PAYMENT	39,220	22,088	17,132	4,711,287
30-Jun-15	PAYMENT	39,220	21,298	17,922	4,693,364
31-Jul-15	PAYMENT	39,220	21,924	17,296	4,676,068
31-Aug-15	PAYMENT	39,220	21,843	17,377	4,658,691
30-Sep-15	PAYMENT	39,220	21,060	18,160	4,640,531
31-Oct-15	PAYMENT	39,220	21,677	17,543	4,622,988
30-Nov-15	PAYMENT	39,220	20,898	18,322	4,604,666
31-Dec-15	PAYMENT	39,220	21,509	17,711	4,586,956
		<b>556,847</b>	<b>344,802</b>	<b>212,044</b>	
31-Jan-16	PAYMENT	39,220	21,427	17,793	4,569,163
29-Feb-16	PAYMENT	39,220	19,967	19,253	4,549,909
31-Mar-16	PAYMENT	39,220	21,254	17,966	4,531,943
30-Apr-16	PAYMENT	39,220	20,487	18,733	4,513,210
31-May-16	PAYMENT	39,220	21,082	18,138	4,495,072
30-Jun-16	PAYMENT	39,220	20,320	18,900	4,476,172
31-Jul-16	PAYMENT	39,220	20,909	18,311	4,457,861
31-Aug-16	PAYMENT	39,220	20,824	18,396	4,439,465
30-Sep-16	PAYMENT	39,220	20,069	19,151	4,420,314
31-Oct-16	PAYMENT	39,220	20,648	18,572	4,401,742
30-Nov-16	PAYMENT	39,220	19,898	19,322	4,382,421
31-Dec-16	PAYMENT	39,220	20,471	18,749	4,363,672
		<b>470,640</b>	<b>247,356</b>	<b>223,284</b>	
31-Jan-17	PAYMENT	39,220	20,384	18,836	4,344,836
28-Feb-17	PAYMENT	39,220	18,332	20,888	4,323,947
31-Mar-17	PAYMENT	39,220	20,198	19,022	4,304,925
30-Apr-17	PAYMENT	39,220	19,461	19,759	4,285,166
31-May-17	PAYMENT	39,220	20,017	19,203	4,265,963
30-Jun-17	PAYMENT	39,220	19,284	19,936	4,246,027
31-Jul-17	PAYMENT	39,220	19,834	19,386	4,226,642
31-Aug-17	PAYMENT	39,220	19,744	19,476	4,207,165
30-Sep-17	PAYMENT	39,220	19,019	20,201	4,186,964
31-Oct-17	PAYMENT	39,220	19,558	19,662	4,167,302
30-Nov-17	PAYMENT	39,220	18,838	20,382	4,146,921
31-Dec-17	PAYMENT	39,220	19,371	19,849	4,127,072
		<b>470,640</b>	<b>234,040</b>	<b>236,600</b>	

		PAYMENT	INTEREST	PRINCIPAL	BALANCE
31-Jan-18	PAYMENT	39,220	19,279	19,942	4,107,130
28-Feb-18	PAYMENT	39,220	17,329	21,891	4,085,239
31-Mar-18	PAYMENT	39,220	19,083	20,137	4,065,102
30-Apr-18	PAYMENT	39,220	18,376	20,844	4,044,259
31-May-18	PAYMENT	39,220	18,892	20,328	4,023,930
30-Jun-18	PAYMENT	39,220	18,190	21,030	4,002,901
31-Jul-18	PAYMENT	39,220	18,698	20,522	3,982,379
31-Aug-18	PAYMENT	39,220	18,603	20,617	3,961,762
30-Sep-18	PAYMENT	39,220	17,909	21,311	3,940,451
31-Oct-18	PAYMENT	39,220	18,407	20,813	3,919,638
30-Nov-18	PAYMENT	39,220	17,719	21,501	3,898,137
31-Dec-18	PAYMENT	39,220	18,209	21,011	3,877,126
		<b>470,640</b>	<b>220,694</b>	<b>249,946</b>	
31-Jan-19	PAYMENT	39,220	18,111	21,109	3,856,017
28-Feb-19	PAYMENT	39,220	16,269	22,951	3,833,066
31-Mar-19	PAYMENT	39,220	17,905	21,315	3,811,751
30-Apr-19	PAYMENT	39,220	17,231	21,989	3,789,762
31-May-19	PAYMENT	39,220	17,703	21,517	3,768,245
30-Jun-19	PAYMENT	39,220	17,035	22,185	3,746,060
31-Jul-19	PAYMENT	39,220	17,499	21,721	3,724,338
31-Aug-19	PAYMENT	39,220	17,397	21,823	3,702,516
30-Sep-19	PAYMENT	39,220	16,737	22,483	3,680,033
31-Oct-19	PAYMENT	39,220	17,190	22,030	3,658,003
30-Nov-19	PAYMENT	39,220	16,536	22,684	3,635,319
31-Dec-19	PAYMENT	39,220	16,981	22,239	3,613,081
		<b>470,640</b>	<b>206,595</b>	<b>264,045</b>	
31-Jan-20	PAYMENT	39,220	16,878	22,342	3,590,738
29-Feb-20	PAYMENT	39,220	15,691	23,529	3,567,209
31-Mar-20	PAYMENT	39,220	16,663	22,557	3,544,653
30-Apr-20	PAYMENT	39,220	16,024	23,196	3,521,456
31-May-20	PAYMENT	39,220	16,450	22,770	3,498,686
30-Jun-20	PAYMENT	39,220	15,816	23,404	3,475,282
31-Jul-20	PAYMENT	39,220	16,234	22,986	3,452,296
31-Aug-20	PAYMENT	39,220	16,126	23,094	3,429,202
30-Sep-20	PAYMENT	39,220	15,502	23,718	3,405,484
31-Oct-20	PAYMENT	39,220	15,908	23,312	3,382,172
30-Nov-20	PAYMENT	39,220	15,289	23,931	3,358,241
31-Dec-20	PAYMENT	39,220	15,687	23,533	3,334,708
		<b>470,640</b>	<b>192,268</b>	<b>278,373</b>	
31-Jan-21	PAYMENT	39,220	15,577	23,643	3,311,065
28-Feb-21	PAYMENT	39,220	13,970	25,250	3,285,815
31-Mar-21	PAYMENT	39,220	15,349	23,871	3,261,944
30-Apr-21	PAYMENT	39,220	14,746	24,474	3,237,470
31-May-21	PAYMENT	39,220	15,123	24,097	3,213,373
30-Jun-21	PAYMENT	39,220	14,526	24,694	3,188,679
31-Jul-21	PAYMENT	39,220	14,895	24,325	3,164,354
31-Aug-21	PAYMENT	39,220	14,781	24,439	3,139,916
30-Sep-21	PAYMENT	39,220	14,194	25,026	3,114,890
31-Oct-21	PAYMENT	39,220	14,550	24,670	3,090,220
30-Nov-21	PAYMENT	39,220	13,969	25,251	3,064,970
31-Dec-21	PAYMENT	39,220	14,317	24,903	3,040,067
		<b>470,640</b>	<b>175,999</b>	<b>294,641</b>	



		<b>PAYMENT</b>	<b>INTEREST</b>	<b>PRINCIPAL</b>	<b>BALANCE</b>
31-Jan-22	PAYMENT	39,220	14,201	25,019	3,015,048
28-Feb-22	PAYMENT	39,220	12,721	26,499	2,988,549
31-Mar-22	PAYMENT	39,220	13,960	25,260	2,963,289
30-Apr-22	PAYMENT	39,220	13,396	25,824	2,937,465
31-May-22	PAYMENT	39,220	13,722	25,498	2,911,966
30-Jun-22	PAYMENT	39,220	13,164	26,056	2,885,910
31-Jul-22	PAYMENT	39,220	13,481	25,739	2,860,171
31-Aug-22	PAYMENT	39,220	13,361	25,859	2,834,311
30-Sep-22	PAYMENT	39,220	12,813	26,407	2,807,904
31-Oct-22	PAYMENT	39,220	13,116	26,104	2,781,800
30-Nov-22	PAYMENT	39,220	12,575	26,645	2,755,155
31-Dec-22	PAYMENT	39,220	12,870	26,350	2,728,805
		<b>470,640</b>	<b>159,379</b>	<b>311,262</b>	
31-Jan-23	PAYMENT	39,220	12,747	26,473	2,702,332
28-Feb-23	PAYMENT	39,220	11,402	27,818	2,674,514
31-Mar-23	PAYMENT	39,220	12,493	26,727	2,647,787
30-Apr-23	PAYMENT	39,220	11,969	27,251	2,620,536
31-May-23	PAYMENT	39,220	12,241	26,979	2,593,558
30-Jun-23	PAYMENT	39,220	11,724	27,496	2,566,062
31-Jul-23	PAYMENT	39,220	11,987	27,233	2,538,829
31-Aug-23	PAYMENT	39,220	11,859	27,361	2,511,468
30-Sep-23	PAYMENT	39,220	11,353	27,867	2,483,601
31-Oct-23	PAYMENT	39,220	11,601	27,619	2,455,983
30-Nov-23	PAYMENT	39,220	11,102	28,118	2,427,865
31-Dec-23	PAYMENT	39,220	11,341	27,879	2,399,986
		<b>470,640</b>	<b>141,821</b>	<b>328,819</b>	
31-Jan-24	PAYMENT	39,220	11,211	28,009	2,371,977
29-Feb-24	PAYMENT	39,220	10,365	28,855	2,343,122
31-Mar-24	PAYMENT	39,220	10,945	28,275	2,314,847
30-Apr-24	PAYMENT	39,220	10,464	28,756	2,286,092
31-May-24	PAYMENT	39,220	10,679	28,541	2,257,551
30-Jun-24	PAYMENT	39,220	10,205	29,015	2,228,536
31-Jul-24	PAYMENT	39,220	10,410	28,810	2,199,726
31-Aug-24	PAYMENT	39,220	10,275	28,945	2,170,781
30-Sep-24	PAYMENT	39,220	9,813	29,407	2,141,375
31-Oct-24	PAYMENT	39,220	10,003	29,217	2,112,157
30-Nov-24	PAYMENT	39,220	9,548	29,672	2,082,486
31-Dec-24	PAYMENT	39,220	9,728	29,492	2,052,993
		<b>470,640</b>	<b>123,647</b>	<b>346,993</b>	
31-Jan-25	PAYMENT	39,220	9,590	29,630	2,023,363
28-Feb-25	PAYMENT	39,220	8,537	30,683	1,992,680
31-Mar-25	PAYMENT	39,220	9,308	29,912	1,962,768
30-Apr-25	PAYMENT	39,220	8,873	30,347	1,932,421
31-May-25	PAYMENT	39,220	9,027	30,193	1,902,228
30-Jun-25	PAYMENT	39,220	8,599	30,621	1,871,607
31-Jul-25	PAYMENT	39,220	8,743	30,477	1,841,130
31-Aug-25	PAYMENT	39,220	8,600	30,620	1,810,510
30-Sep-25	PAYMENT	39,220	8,185	31,036	1,779,475
31-Oct-25	PAYMENT	39,220	8,312	30,908	1,748,567
30-Nov-25	PAYMENT	39,220	7,904	31,316	1,717,251
31-Dec-25	PAYMENT	39,220	8,022	31,198	1,686,053
		<b>470,640</b>	<b>103,700</b>	<b>366,940</b>	

		PAYMENT	INTEREST	PRINCIPAL	BALANCE
28-Feb-26	PAYMENT	39,220	6,982	32,239	1,622,471
31-Mar-26	PAYMENT	39,220	7,579	31,641	1,590,829
30-Apr-26	PAYMENT	39,220	7,191	32,029	1,558,801
31-May-26	PAYMENT	39,220	7,282	31,938	1,526,862
30-Jun-26	PAYMENT	39,220	6,902	32,318	1,494,545
31-Jul-26	PAYMENT	39,220	6,981	32,239	1,462,306
31-Aug-26	PAYMENT	39,220	6,831	32,389	1,429,917
30-Sep-26	PAYMENT	39,220	6,464	32,756	1,397,161
31-Oct-26	PAYMENT	39,220	6,526	32,694	1,364,467
30-Nov-26	PAYMENT	39,220	6,168	33,052	1,331,415
31-Dec-26	PAYMENT	39,220	6,219	33,001	1,298,415
		<b>470,640</b>	<b>83,002</b>	<b>387,638</b>	
31-Jan-27	PAYMENT	39,220	6,065	33,155	1,265,260
28-Feb-27	PAYMENT	39,220	5,338	33,882	1,231,378
31-Mar-27	PAYMENT	39,220	5,752	33,468	1,197,910
30-Apr-27	PAYMENT	39,220	5,415	33,805	1,164,105
31-May-27	PAYMENT	39,220	5,438	33,782	1,130,323
30-Jun-27	PAYMENT	39,220	5,110	34,110	1,096,213
31-Jul-27	PAYMENT	39,220	5,121	34,099	1,062,114
31-Aug-27	PAYMENT	39,220	4,961	34,259	1,027,855
30-Sep-27	PAYMENT	39,220	4,646	34,574	993,281
31-Oct-27	PAYMENT	39,220	4,640	34,580	958,701
30-Nov-27	PAYMENT	39,220	4,334	34,886	923,815
31-Dec-27	PAYMENT	39,220	4,315	34,905	888,910
		<b>470,640</b>	<b>61,136</b>	<b>409,504</b>	
31-Jan-28	PAYMENT	39,220	4,152	35,068	853,843
29-Feb-28	PAYMENT	39,220	3,731	35,489	818,354
31-Mar-28	PAYMENT	39,220	3,823	35,397	782,957
30-Apr-28	PAYMENT	39,220	3,539	35,681	747,276
31-May-28	PAYMENT	39,220	3,491	35,729	711,547
30-Jun-28	PAYMENT	39,220	3,217	36,003	675,543
31-Jul-28	PAYMENT	39,220	3,156	36,064	639,479
31-Aug-28	PAYMENT	39,220	2,987	36,233	603,246
30-Sep-28	PAYMENT	39,220	2,727	36,493	566,753
31-Oct-28	PAYMENT	39,220	2,647	36,573	530,180
30-Nov-28	PAYMENT	39,220	2,397	36,823	493,357
31-Dec-28	PAYMENT	39,220	2,305	36,915	456,442
		<b>470,640</b>	<b>38,171</b>	<b>432,469</b>	
31-Jan-29	PAYMENT	39,220	2,132	37,088	419,354
28-Feb-29	PAYMENT	39,220	1,769	37,451	381,903
31-Mar-29	PAYMENT	39,220	1,784	37,436	344,467
30-Apr-29	PAYMENT	39,220	1,557	37,663	306,804
31-May-29	PAYMENT	39,220	1,433	37,787	269,017
30-Jun-29	PAYMENT	39,220	1,216	38,004	231,014
31-Jul-29	PAYMENT	39,220	1,079	38,141	192,873
31-Aug-29	PAYMENT	39,220	901	38,319	154,554
30-Sep-29	PAYMENT	39,220	699	38,521	116,032
31-Oct-29	PAYMENT	39,220	542	38,678	77,354
30-Nov-29	PAYMENT	39,220	350	38,870	38,484
31-Dec-29	PAYMENT	38,664	180	38,484	0
		<b>470,084</b>	<b>13,642</b>	<b>456,442</b>	

PORCUPINE PELLET PLANT  
LOC AMORTIZATION | 31-Dec-14

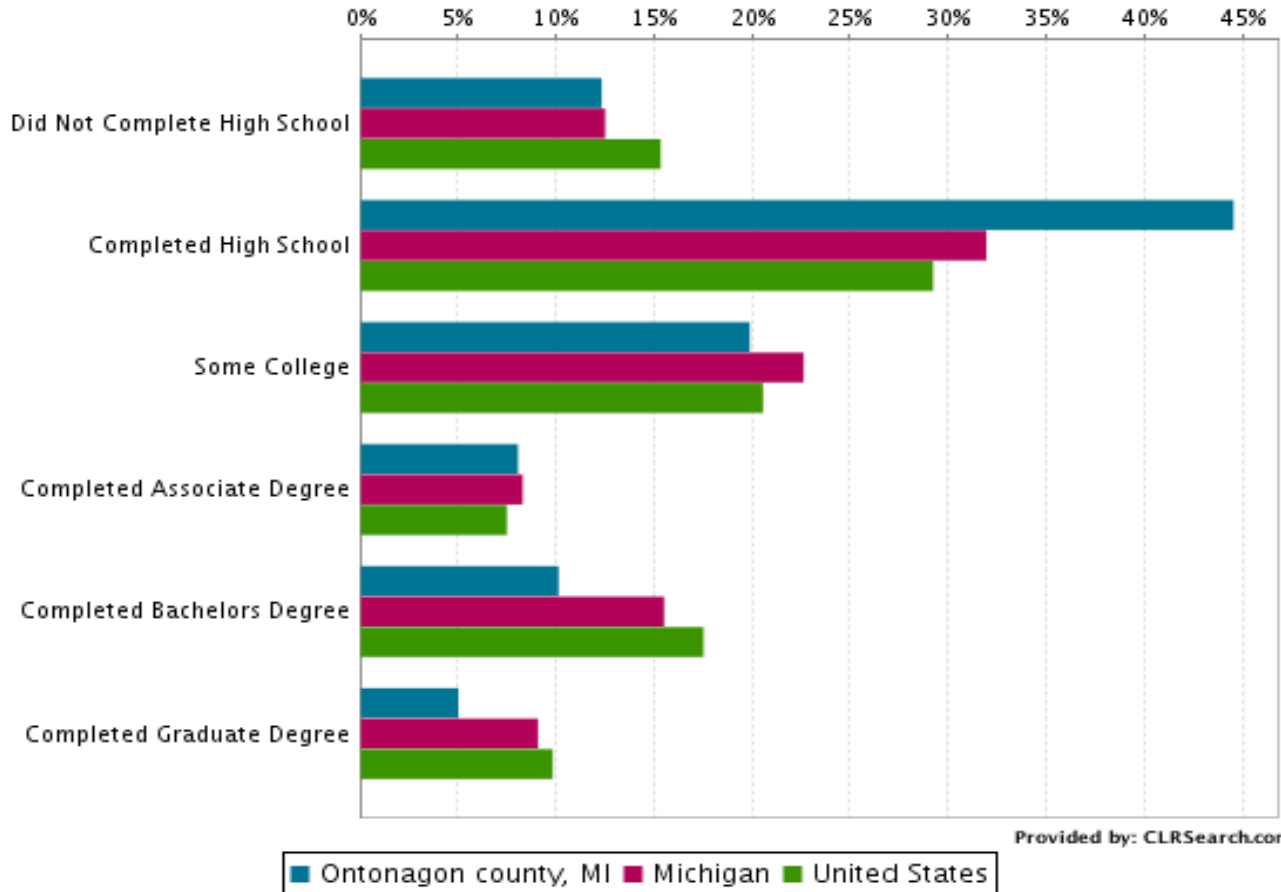
		PAYMENT	INTEREST	PRINCIPAL	BALANCE
<b>6% FOR LIFE OF LOC</b>					<b>0</b>
15-Jun-15	DRAW			-50,000	50,000
15-Jul-15			247	-220,000	270,000
15-Aug-15			1,376	-220,000	490,000
15-Sep-15			2,497	-10,000	500,000
15-Oct-15		156,585	2,466	150,000	350,000
15-Nov-15		351,784	1,784	350,000	0
		<b>508,369</b>	<b>8,369</b>	<b>0</b>	
15-May-16	DRAW			-50,000	50,000
15-Jun-16			255	-340,000	390,000
15-Jul-16			1,923	-350,000	740,000
15-Aug-16			3,771	-340,000	1,080,000
15-Sep-16			5,504	-30,000	1,110,000
15-Oct-16		226,927	5,474	210,000	900,000
15-Nov-16		554,586	4,586	550,000	350,000
15-Dec-16		351,726	1,726	350,000	0
		<b>1,133,239</b>	<b>23,239</b>	<b>50,000</b>	
15-May-17	DRAW			-60,000	60,000
15-Jun-17			306	-390,000	450,000
15-Jul-17			2,219	-370,000	820,000
15-Aug-17			4,179	-380,000	1,200,000
15-Sep-17			6,115	0	1,200,000
15-Oct-17		378,736	5,918	360,000	840,000
15-Nov-17		774,281	4,281	770,000	70,000
15-Dec-17		70,345	345	70,000	0
		<b>1,223,362</b>	<b>23,362</b>	<b>60,000</b>	
15-May-18	DRAW			0	0
15-Jun-18			0	0	0
15-Jul-18			0	-230,000	230,000
15-Aug-18			1,172	-370,000	600,000
15-Sep-18			3,058	-40,000	640,000
15-Oct-18		367,386	3,156	360,000	280,000
15-Nov-18		281,427	1,427	280,000	0
		648,813	8,813	0	
15-May-18	DRAW			0	0
15-Jun-18			0	0	0
15-Jul-18			0	0	0
15-Aug-18			0	-70,000	70,000
15-Sep-18			357	-40,000	110,000
15-Oct-18		110,899	542	110,000	0
		<b>110,899</b>	<b>899</b>	<b>0</b>	

**APPENDIX XI: WHITE PINE EDUCATION STATISTICS**

**EDUCATIONAL ATTAINMENT IN ONTONAGON COUNTY<sup>19</sup>**

The data for Ontonagon County contains data for the following areas: Ontonagon, Bergland, Bruce Crossing, Mass City, Rockland, Trout Creek, White Pine, Ewen, and Kenton.

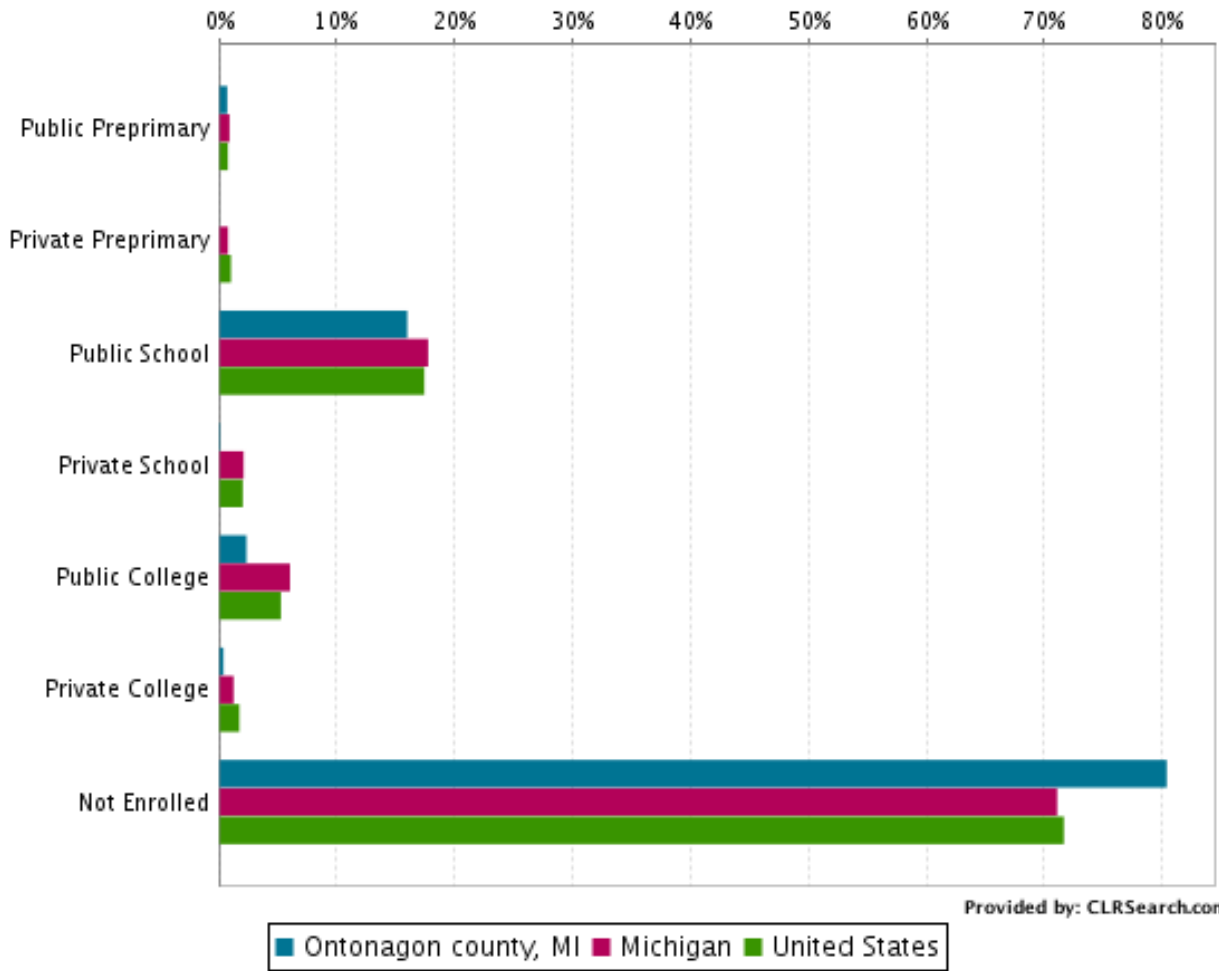
**2010 Highest Education Level Attained (Population Age 25+) for Ontonagon county, MI**



2010 Highest Education Level Attained (Population Age 25+)	Ontonagon County		Michigan		United States	
Did Not Complete High School	601	12.33%	801,925	12.51%	30,370,155	15.35%
Completed High School	2,171	44.55%	2,047,609	31.95%	57,863,097	29.24%
Some College	969	19.89%	1,450,524	22.63%	40,691,836	20.56%
Completed Associate Degree	393	8.06%	532,229	8.30%	14,841,627	7.50%
Completed Bachelors Degree	494	10.14%	994,506	15.52%	34,682,582	17.52%
Completed Graduate Degree	245	5.03%	582,200	9.08%	19,465,340	9.84%

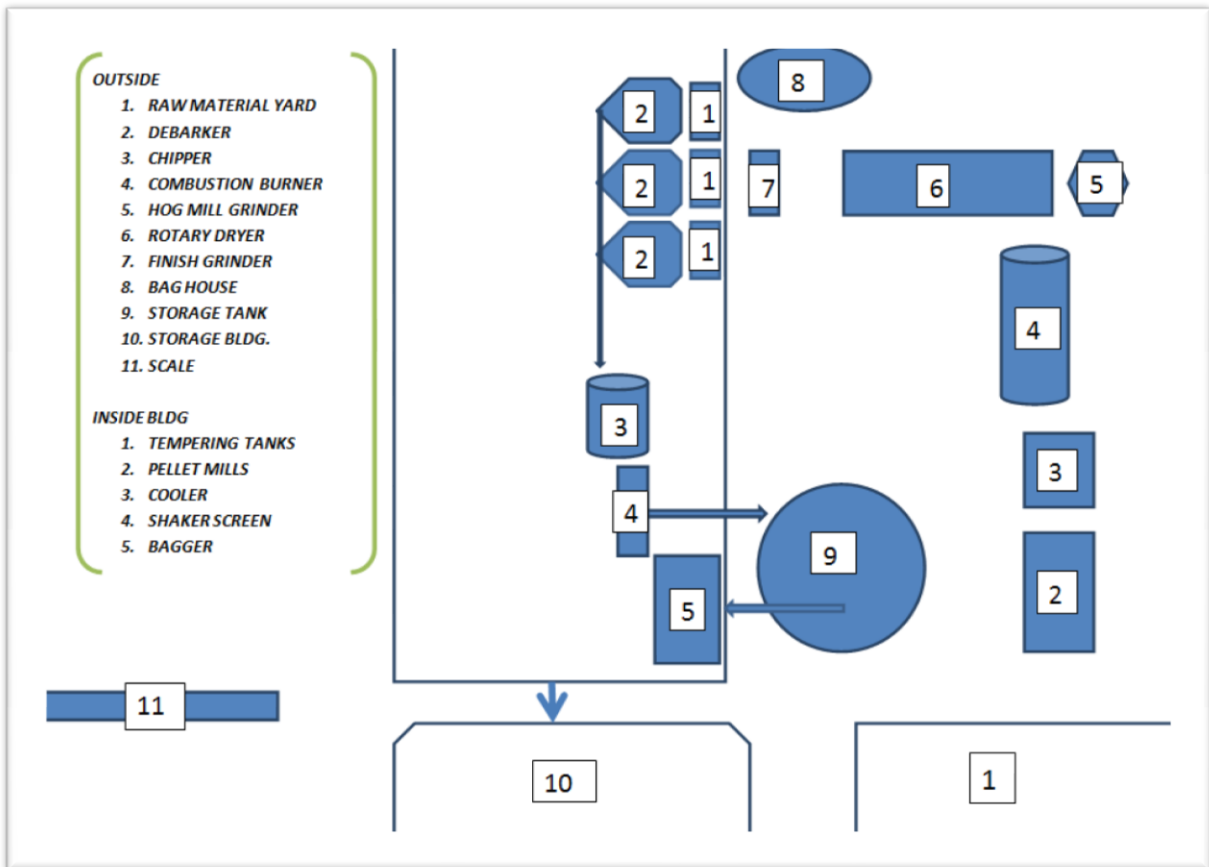
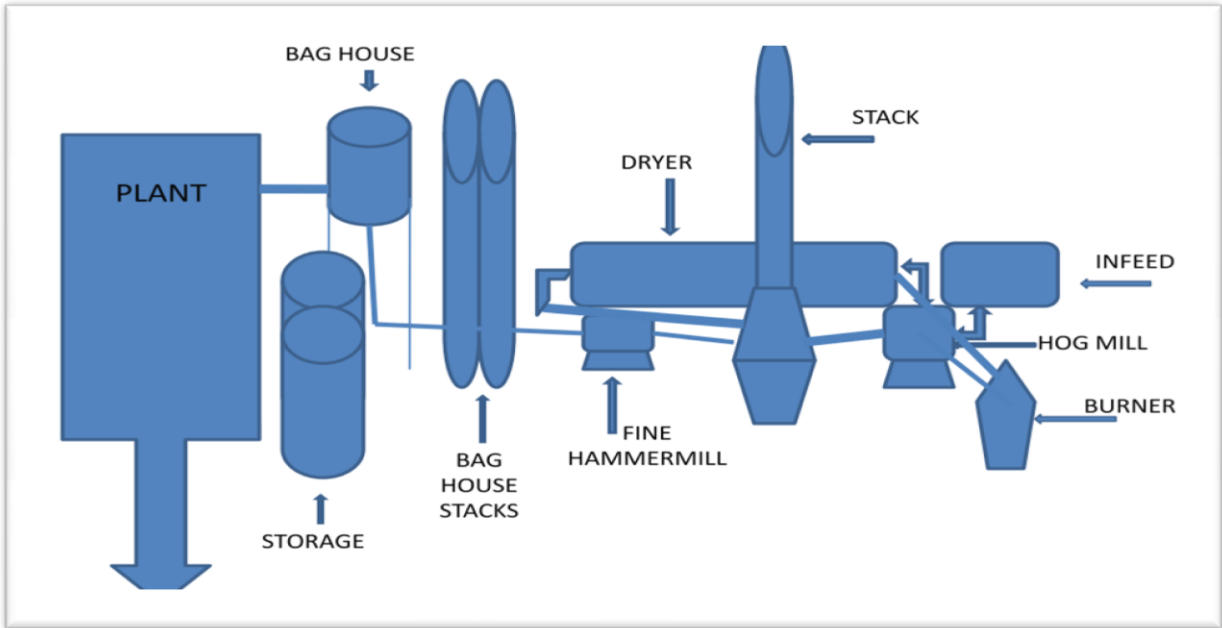
<sup>19</sup> <http://www.clrsearch.com/White-Pine-Demographics/MI/Education-Level-and-Enrollment-Statistics>

## 2010 Education Enrollment (Population Age 3+) for Ontonagon county, MI



2010 Education Enrollment (Population Age 3+)	Ontonagon County		Michigan		United States	
<b>Education Index</b>		60		92		100
<b>Public Preprimary</b>	46	0.73%	88,143	0.93%	2,320,253	0.79%
<b>Private Preprimary</b>	0	0.00%	75,506	0.79%	3,082,467	1.05%
<b>Public School</b>	1,009	15.99%	1,692,754	17.76%	51,414,159	17.44%
<b>Private School</b>	9	0.14%	201,669	2.12%	6,042,324	2.05%
<b>Public College</b>	149	2.36%	576,802	6.05%	15,574,165	5.28%
<b>Private College</b>	26	0.41%	121,157	1.27%	5,180,193	1.76%
<b>Not Enrolled in School</b>	5,070	80.36%	6,772,747	71.08%	211,257,159	71.64%

**APPENDIX XII: LAYOUT OPTIONS**



## APPENDIX XIII: WOOD PELLET DEALERS IN MICHIGAN AND WISCONSIN

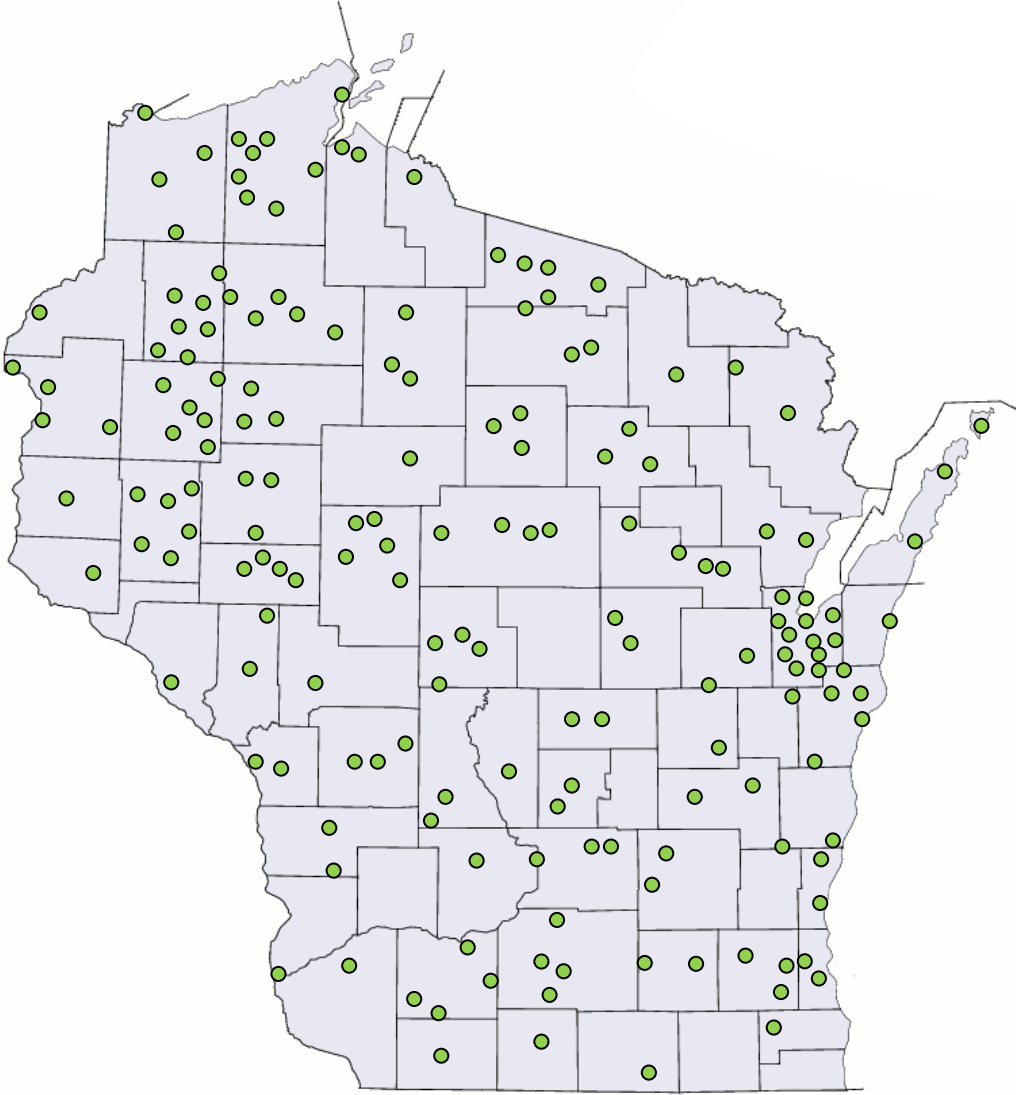
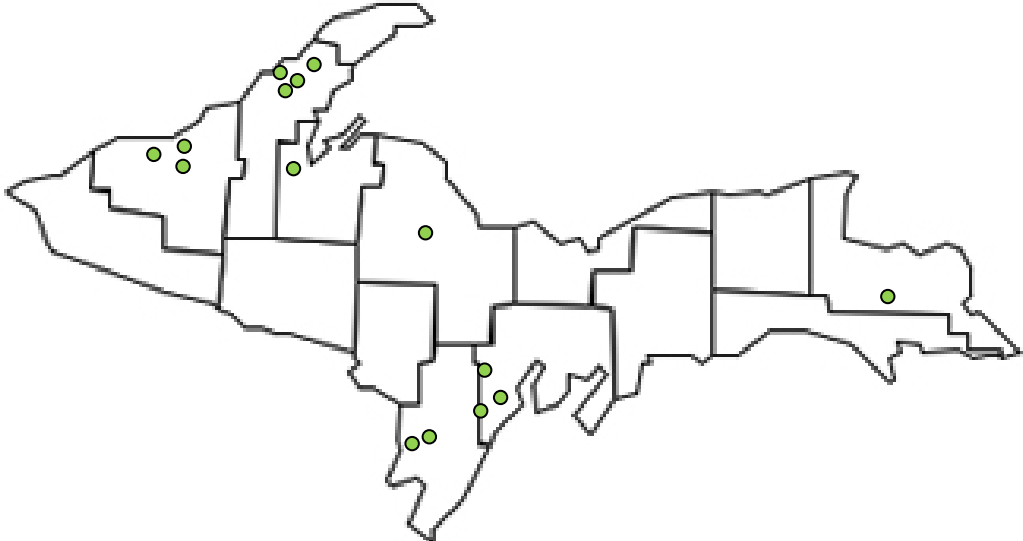
CATAWBA FARM SUPPLY CATAWBA, WI	CRANBERRY CREEK SERVICES/PREMIER PELLETS ONTONAGON, MI	TODD MENKE STEPHENSON, MI	AG CONSULTING PRODUCTS VIROQUA, WI
MUSHROOMS MCFARLAND, WI	LARRY RAIKOWSKI RAIKOWSKI FARM THE MARKET ON STRONGS	SEYMOUR FEED & SUPPLY SEYMOUR, WI	RAPID MART NEOSHA, WI 53059
COUNTRY VISIONS COOPERATIVE MISHICOT COUNTRY STORE MISHICOT, WI	BRAUN SERVICES, INC. PORTAGE, WI	JP LANDSCAPE GREENLEAF, WI	BLOOMER FARMERS UNION CO-OP BLOOMER, WI
ALPHA WOOD PELLETS GRANTSBURG, WI	DISCHLER HEATING-COOLING & FIREPLACES, INC. PRAIRIE DU SAC, WI	BERNARD M. CORBEILLE GREEN BAY, WI	ARDEX ALL AMERICAN MINERAL CO SHAWANO, WI
BK ENTERPRISES DARLINGTON, WI	KP'S SIMPLY FRESH FREEDOM, WI	NATURAL ENCOUNTERS APPLETON, WI	DALE TERBEEST BROWNSVILLE, WI
GRESHAM HARDWARE LLC GRESHAM, WI	PLUTCHAKS INC MASS CITY, MI	FRANKS AUTO SERVICE REEDSVILLE, WI	M&M OUTDOOR FURNACE & SUPPLY MARIBEL, WI
COUNTRYSIDE SALVAGE & RECYCLING LLC PACKWAUKEE, WI	LOTUS GROWING TECHNOLOGIES, LLC. ORFORDVILLE, WI	MANITOWOC HEATING & REFRIGERATION MANITOWOC, WI	BTR WOOD PRODUCTS MARSHFIELD, WI
AZ HANDYMAN SERVICES, LLC PORTAGE, WI	GUDOWICZ STORE ARMSTRONG CREEK, WI	UNITED BUILDING SUPPLY OOSTBURG, WI	ALEX GINTNER HARTFORD, WI
UMHOFER LUMBER & SUPPLIES, INC. SPRING GREEN, WI	DAVE'S SEWER SERVICE WAUPACA, WI	LULLOFF H & SON KIEL, WI	ALL FLOORS & MORE, INC SHAWANO, WI
LAKESHORE MOTOR SPORTS LLC KEWAUNEE, WI	FREIERS ELECTRIC ELLSWORTH, WI	HEARTH HOME & FIREPLACE FOND DU LAC, WI	MARIBEL GRAIN MARIBEL, WI
BRENDA AND PATRIC HARDIMAN SPARTA, WI	SCHMITZ FARMS MINERAL POINT, WI	FIREPLACES UNLIMITED RHINELANDER, WI	CLINTON COLLINS ARLINGTON, WI
NORTHLAND SERVICES WHITE LAKE, WI	NEUENS FREDONIA LUMBER CO. INC. FREDONIA, WI	CENTRAL SALES & CONSIGNMENTS LITTLE SUAMICO, WI	FROZEN TUNDRA DENMARK, WI
HOME OASIS WI LLC CHIPPEWA FALLS, WI	FREDONIA, WI	PRIMROSE PELLET STOVES LLC MT. HOREB, WI	MATRAVERS HARDWARE (MM) OCONTO, WI
FIRESIDE HEARTH & HOME EAU CLAIRE, WI RANDYS MOBILE MARINE SERVICE LLC TROY, WI	SKINNY'S HIDEOUT BENNETT, WI	RICK BUNNEL HORTONVILLE, WI	JEFF BRIESE SALES OSHKOSH, WI
L & N METAL WORKS LLC PULASKI, WI	KOWALSKE'S HOT SPOT WATERFORD, WI	FIRE AND STONE DESIGN WATERTOWN, WI	VALUE IMPLEMENT OSSEO, WI
LEMONE TRANSFER LAKE NEBAGAMON, WI	WERNER CONSTRUCTION TOMAHAWK, WI	WISCONSIN AG-SHAVINGS BLOOMER, WI PAT LEIBSLE COLOMA, WI. 54930	ALTERNATIVE HEAT SOLUTIONS VAN DYNE, WI
	NORTHWOODS TAP BARNES, WI	FIRKUS LUMBER COMPANY ROSHOLT, WI IOLA, WI	GREAT LAKES SERVICES KINROSS, MI
	SEEDS & STUFF FARM MARKET COLFAX, WI		

LAKEWOODS RESORT CABLE, WI	BALSAM LAKE, WI RAINBOW HOME CENTER RICE LAKE, WI	ACE HARDWARE WESTON SCHOLFIELD, WI	HUNDT IMPLEMENT, INC CASHTON, WI
A-1 CHIMNEY SERVICES SLINGER, WI	DAIZY SWEEPS COLUMBUS, WI	BURKUM MILLING COMPANY SOILDERS GROVE, WI	CHIMNEY SPECIALISTS, INC. HIGHLAND, WI
P-TECH INTEGRATION, LLC MUKWONAGO, WI	RALPH HAMM MAUSTON, WI 53948	HUBBARD RACING, INC. STEPHENSON, MI	RISLEY PELLET SOLUTIONS MONTICELLO, WI
LAMPERTS STURGEON BAY, WI	JANSSEN SAWMILL SIREN, WI HAYWARD MERCHANTILE CO, LLC. HAYWARD, WI	NORBERT HENKE WESTFIELD, WI	A-Z TOWN AND COUNTRY, LLC. COLBY, WI
ERICKSON FOREST PRODUCTS KENNAN, WI	ROYALL MFG, INC. ELROY, WI	CUSTOM WOOD PELLETS MIKANA, WI	FARMERS IMPLEMENT, LLC ALLENTON, WI
NORTHLAND FOODS POPLAR, WI	AUTO VALUE OF L' ANSE L'ANSE, MI	STONER'S ON MAIN WHEELER, WI	FEDERATION COOPERATIVE BLACK RIVER FALLS, WI
AMERICAN HOME FIREPLACE SALEM, WI	WAUTOMA HARDWARE WAUTOMA, WI	GBM, LLC. HOLCOMBE, WI	BLAINS FARM & FLEET RICE LAKE, WI
STONEHOUSE WINDOWS & DOORS ISHPEMING, MI	GLENOAK LUMBER & MILLING MONTELLO, WI	ARCH NORTH HEATING & COOLING BARNES, WI	SPOONER LAMPERTS SPOONER, WI
MARY UGOREPZ EDGAR, WI	BRIAN'S PELLET SALES COUDEREY, WI	LAMPERTS RIDGELAND, WI	ST. CROIX FALLS LAMPERTS ST. CROIX FALLS, WI
SUNBURST SALES, LLC RIPON, WI	JIM'S ALTERNATIVE ENERGY STORE LLC CAMERON, WI	WOOD STOVES AND MORE MINONG, WI	FULLER LOG & LUMBER PRARIE DU CHIEN, WI
MB PELLETS BELGIUM, WI	BENDER MACHINE WORKS HAYWARD, WI	TWIN WATERS ENERGY ST. GERMAIN, WI	LOYAL FARM AND HOME CENTER LOYAL, WI
PS SEASONING/PRO SMOKER IRON RIDGE, WI	LAMPERTS LUMBER YARD SISTERBAY, WI	KARAM MANUFACTURING, INC. BERLIN, WI	CO-OP HARDWARE HANK IRON RIVER, WI
RYMER HEATING CRIVITZ, WI	KETTLE MORAIN TOWN & COUNTRY LLC KEWASKUM, WI	OUDOOR WOODSTOVE SPECIALISTS,LLC ONEIDA, WI	KNOECK, INC. WAUSAU, WI
FAMILY FARMS, INC. ELEVA, WI	LAKE SUPERIOR EVERGREENS BRULE, WI	ECONOMY FEED MILL BLOOMINGTON, WI	BAY AREA POOL & SPA, INC. ESCANABA, MI
SUNSHINE TREES ANTIGO, WI	LAKE STATES-LUMBER SPARTA, WI	RICK'S ALTERNATIVE ENERGY CORNELL, MI	NORTHWEST WI ENT, INC. TREGO, WI
ARDISAM CUMBERLAND, WI	KONTEKA WHITE PINE, MI	WOODRUFF HARDWARE INC. WOODRUFF, WI	ANCO COMPANY MASON, WI
SHIELDS HEATING FIREPLACE BARABOO, WI	TRIBOVICH CONSTRUCTION, LLC. BAYFIELD, WI	J&S PELLETS ESCANABA, MI	MEDFORD FARM & HOME CENTER MEDFORD, WI
COUNTRY PRIDE COOP SPOONER, WI		AUGUSTA TRUE VALUE HARDWARE AUGUSTA, WI	AFFORDABLE PELLETS WISCONSIN RAPIDS, WI
UNITY CUSTOM SERVICES			



DOUBLE D DAIRY ANTIGO, WI	NORTHWOODS FLOORING & HOME CENTER, LLC. PARK FALLS, WI	ASSOCIATED MERCHANTS, INC. BEAVER DAM, WI
FREDERIC HARDWARE FREDERIC, WI	SEASONAL POWER TOYS BIRCHWOOD, WI	HAYNES ENTERPRISE - CENTRAL OUTDOOR HEATING PHILLIPS, WI
VALUE IMPLEMENT ARCADIA, WI	EXLAND FEED MILL EXLAND, WI	OFSTAD SALES AND SERVICE GURNEY/SAXON, WI
NORTHWOODS TRAILERS MARION, WI	HARRINGTON RIDGE COAL & STOVE HANCOCK, MI	ROLLRITE OVERHEAD DOORS PICKEREL, WI
NORTHERN STOVE & PELLET HOUGHTON, MI	PLUM CITY FEED MILL PLUM CITY, WI	KELA CONSTRUCTION, INC. HANCOCK, MI
TOP HAT FIREPLACE & CHIMNEY MADISON, WI	PALCHIK'S PELLETS LLC EAU CLAIRE, WI	GREAT AMERICAN HOMES & FIREPLACE MENOMONIE, WI
BITTNER'S LUMBER, LLC. SOUTH PRAIRIE FARM, WI	ONEIDA CONCRETE PRODUCTS, INC. RHINELANDER, WI	TRAP N FISH, INC. WINTER, WI
LOYD'S PELLET SALES RIO, WI	CONCRETE PRODUCTS, INC. EAGLE RIVER, WI	TRI COUNTY HEATING & COOLING CRANDON, WI
WARMING TRENDS, INC. ONALASKA, WI	TRACTOR CENTRAL SHELDON, WI	J&J FOREST PRODUCTS GLENWOOD CITY, WI
DAN'S FEED BIN SUPERIOR, WI	ASHLAND ACE HARDWARE ASHLAND, WI	MORGAN WOOD PRODUCTS, LLC. OCONTO FALLS, WI
B & M BIOMASS BARRON, WI	D&D FARM SUPPLY ARCADIA, WI	ACE HARDWARE OF CALUMET CALUMET, MI
BOSSERT FIREPLACE SHOPPE MINERAL POINT, WI	HOMESTEAD COUNTRY STOVES, LLC. TOMAH, WI	WASHINGTON ISLAND WASHINGTON ISLAND, WI
TRUE VALUE HARDWARE AMERY, WI	EARTH SENSE ENERGY SYSTEMS, INC. DALE, WI	ST. CROIX FALLS - DO-IT ST. CROIX FALLS, WI
CULLIGAN WATER CONDITIONING OF ASHLAND ASHLAND, WI	BRIAN HEMPLEMAN THORP, WI	ADAMS - DO-IT ADAMS, WI
NATURES HEAT NECEDAH, WI	S.D. CEDAR PRODUCTS ARBOR VITAE, WI	AMERY - DO-IT AMERY, WI
FREIERS FIREPLACE SOURCE HUDSON, WI	BUCHHOLZ FEED STORE, INC. LADYSMITH, WI	AUGUSTA - DO-IT AUGUSTA, WI
UP NORTH TRADERS SAYNER, WI	BARRY'S BUILDERS SUPPLY BRUCE, WI	CHETEK LAMPERTS CHETEK, WI
STONEY MEADOWS SALES, LLC. PITTSVILLE, WI		

Visual Representation of Pellet Dealers in Upper Michigan and Wisconsin:



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