

Table of Contents

Section 1: Introduction

How to Use This Guidebook	1
What is Biomass Energy?	2
What is a Biorefinery?	2
How to Plan a Bioenergy Project	4

Section 2: Bioenergy Technologies

Introduction.....	8
Alcohol Production.....	10
Anaerobic Digestion.....	19
Combined Heat and Power.....	25
Densification.....	30
Direct Combustion.....	36
Gasification.....	41
Landfill Gas.....	46
Liquefaction.....	52
Oilseeds Extraction and Biodiesel.....	56
Pyrolysis.....	65

Section 3: Environmental Considerations

Introduction.....	70
Air Quality.....	71
Air Quality Laws and Regulations.....	72
National Ambient Air Quality Standards (NAAQS).....	73
Prevention of Significant Deterioration.....	75
Nonattainment Area New Source Review.....	75
Hazardous Air Pollutants.....	76
PM-10 Standards.....	79
PM-2.5 Standards.....	79
Waste Management.....	81
Solid Waste Disposal (Non-hazardous).....	81
Hazardous Waste Disposal.....	82
Water Quality.....	84

Section 4: Permits by Category

Introduction	85
Agriculture	86
Commodity Dealer's License	
Commodity Warehouse License	
Feed Dealer's Permit	
Fertilizer Dealer Registration	
Air Quality	90
Montana Air Quality Permit	
Title V Operating Permit	
Prevention of Significant Deterioration Review	
New Source Review in Nonattainment Areas	
Open Burning Permit	
Alcohol Production	94
Alcohol Fuel Producers Permit (Federal)	
Special Fuel Distributor's License	
Renewable Identification Number Registration & Reporting	
BioDiesel	96
Building, Mechanical, Electrical & Plumbing	97
Building Permit	
Mechanical Permit	
Electrical Permit	
Plumbing Permit	
Forest Clearing and Burning.....	102
Fire Hazard Reduction	
Timber Sales Permit	
Land Use	103
Floodplain and Floodway Permit	
Lakeshore Permit	
Major Facility Siting.....	104
Certificate of Compliance	
Occupational Safety and Health	105
Boiler Operating Certificate	
Boiler Operators License	
Fire Safety Inspections	
Waste Management	108
Hazardous Waste Management Facility Permit	
Underground Storage Tank Permit	

Small Biodiesel Production Facility Permit	
Solid Waste Management System License	
Water Quality.....	113
Montana Groundwater Pollution Control System (MGWPCS) Permit	
Montana Pollution Discharge Elimination System (MPDES) Permit	
Permit for Storm Water Discharges Assoc. w/ Construction Activity	
National Pollutant Discharge Elimination System (NPDES) Permit	
Stream Protection Act Permit	
Stream Bed and Land Preservation Permit	
Beneficial Water Use Permit	
Other	121
Small Biodiesel Production Facility License	
EPA Biodiesel Fuel Registration	
Testing Exemption for Non-Certified Alternative Fuels	
Weighing or Measuring Device License	
One-Stop Business Licensing	

Section 5: Special Considerations

Business Licensing Requirements	126
Combined Heat & Power and Small Power Production.....	126
Dam Safety	127
Forested Areas	127
Highways/Transportation	128
Indian Reservations	129
Local Areas.....	129
Navigable Waterways.....	130
Occupational Safety and Health	130
Urban Areas/Municipalities.....	131
Water Use	132

Index

Appendix A: Montana Bioenergy Facilities.....	133
Appendix B: Agencies/Organizations	145
Appendix C: Biomass Resources	166
Glossary of Bioenergy Terms.....	177
Acronym Guide	186
References and Selected Bibliography	188

Section 1: Introduction

The *Montana Bioenergy Guidebook* was produced to provide project developers, government officials, professionals, and others with a brief description of the technologies used in developing bioenergy projects and the permitting process involved with those projects. Many individuals, businesses, and municipalities are interested in developing bioenergy projects, and many laws and regulations affect such projects. Projects frequently require permits from local, state, and federal agencies and this guidebook addresses all three levels of regulation.

The *Montana Bioenergy Guidebook* is not a legal document and should not be relied on exclusively to determine legal responsibilities. It is not a substitute for obtaining detailed information regarding licenses, permits, standards, operating requirements, and enforcement from government agencies. Any particular project may require permits and licenses not included in this guidebook. The authors recommend that whenever a specific area of regulation is identified the appropriate agencies be contacted for further information.

How to Use This Guidebook

The *Montana Bioenergy Guidebook* is divided into five sections. Section 1 explains the purpose of the guidebook and how to use it, introduces the reader to bioenergy concepts, and outlines the process of planning a bioenergy project. Section 2 discusses ten bioenergy technologies and provides an overview of the permits, licenses, or other areas of compliance related to each technology. Also included are process flowcharts that detail feedstocks, process steps, end products, and potential emissions for each technology. State and federal incentives, if available, are identified. Section 3 discusses environmental considerations related to air quality, water quality, and waste management. Section 4 lists permits by category and provides an overview of applicable laws and application procedures. Section 5 discusses special considerations not addressed elsewhere, such as business licensing requirements, highways/transportation requirements, dam safety, forested areas, and water use. Finally, the appendices contain a list of Montana bioenergy projects; a list of state, federal, and other information sources; and information on biomass resources in Montana.

Permit descriptions are based on the *Montana Index of Environmental Permits*, Sixteenth Edition, 2008 (<http://leg.mt.gov/content/publications/environmental/2008permitindex.pdf>); *Montana Code Annotated* (MCA) [http://data.opi.mt.gov/bills/MCA_toc/index.htm]; and *Administrative Rules of Montana* (ARM) [<http://mtrules.org/>]. Copies of specific rules are available from the governing local, state, or federal agency.

What is Biomass Energy?

For the purposes of this publication, biomass is any renewable organic matter, including forest and mill residues, agricultural crops and wastes, wood and wood wastes, feedlot residues, food processing wastes, and municipal solid waste. These feedstocks are renewable over a few months to a few years in most cases and can be converted into a variety of energy products such as electricity, mechanical power, space heat, industrial process heat, or liquid fuels. Energy produced from processing biomass is called *bioenergy*.

Each feedstock has advantages and disadvantages. How much usable material is produced? Where can it be grown? How much energy and water is required? How easily can it be transported? The most common bioenergy feedstocks are those that are efficiently produced, efficiently handled and transported, and that can be efficiently converted into new forms of energy.

A bioenergy facility may combine several technologies. For example, a boiler burning wood waste could provide process steam for an alcohol production plant. Anaerobic digestion, biodiesel production, direct combustion, densification, cogeneration, oilseed extraction, and landfill gas are bioenergy technologies currently employed in Montana.

Biomass-produced energy offers numerous advantages. Local renewable energy resources can be utilized. Transportation energy costs can be low. Waste disposal can be simplified. Local economies become stimulated and foreign trade deficits reduced as less imported oil and natural gas are used. But biomass energy is not without environmental concerns. Air and water quality issues arise with many of these technologies, as do land use issues and other environmental considerations. The permits, regulations, and standards that protect the Montana environment also extend to biomass projects.

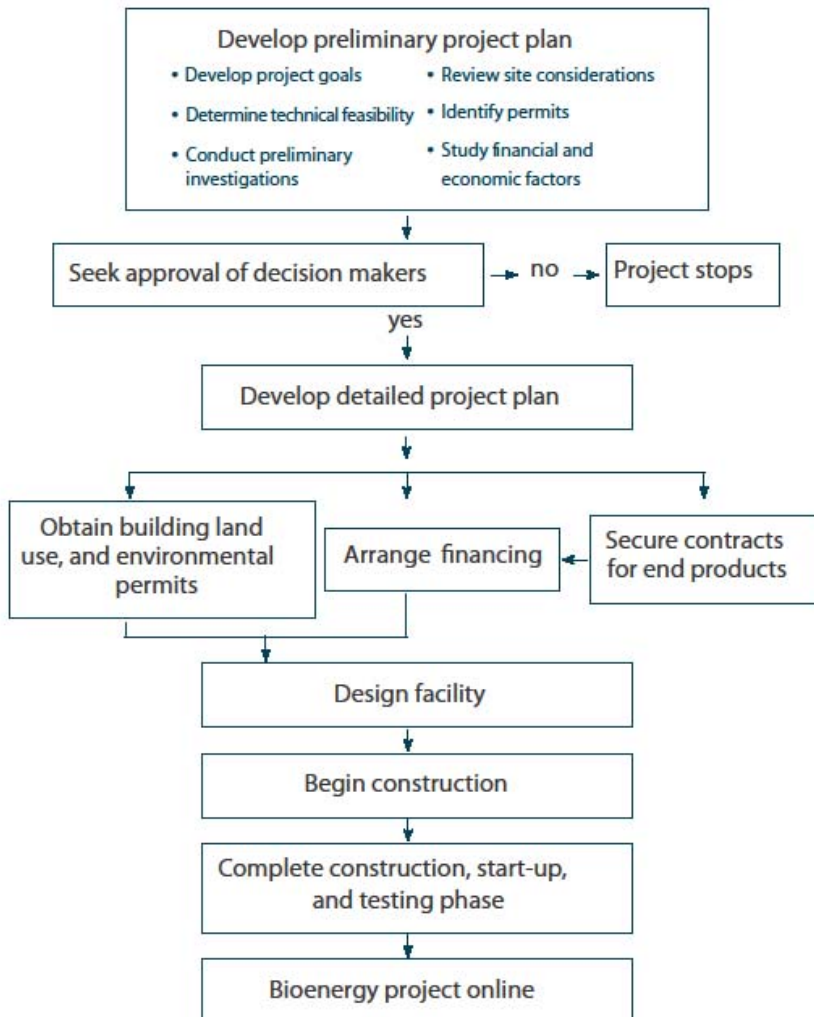
What is a Biorefinery?

A biorefinery is a facility that integrates biomass conversion processes and equipment to produce fuels, power, and chemicals from a biomass feedstock. The biorefinery concept is analogous to today's petroleum refineries, which produce multiple fuels and products from crude oil. Industrial biorefineries have been identified by the U.S. Department of Energy (DOE) as the most promising route to the creation of a new domestic bio-based industry.

By producing multiple products, a biorefinery can take advantage of the differences in biomass components and intermediates and maximize the value derived from the biomass feedstock. A biorefinery might, for example, produce one or several low-volume, but high-value, chemical products and a low-value, but high-volume liquid transportation fuel, while generating electricity for its own use — and perhaps enough for off-site sale — as well as process heat. The high-value products enhance profitability, the high-volume fuel helps meet national energy needs, and the power production reduces costs and avoids greenhouse gas emissions.

FIGURE 1

How to Plan a Bioenergy Project



How to Plan a Bioenergy Project

Successful development of a bioenergy project depends on a number of factors, including thorough research and planning, economics, financing, resource availability, effective fuel collection and conversion, appropriate design for a location, efficient operation, and how the project is presented to local governments and to the public.

The following guidelines, illustrated in Fig. 1, are helpful for project planning.

1. Develop a Preliminary Project Plan

Develop an organized, preliminary project plan that includes information on project goals, prospective sites, resource availability, plant size and design, technologies to be used, and market analyses for products. A preliminary financial and economic feasibility assessment should be developed to include estimates of project costs, projected revenues or savings, and economic factors that influence those areas. Prospective developers should research and assess possible environmental considerations and potential impacts.

A. Facility Design

Review the project goals, technologies that will be used, and plant size and design to determine the technical feasibility of the project. An engineer can complete preliminary plant and system designs, develop technical options and alternate plans and identify potential emissions, effluents, and environmental impacts.

B. Site Considerations

From the list of sites identified in the preliminary project plan, select a preferred site and an alternate site. Site selection involves a number of considerations, including land costs, resource accessibility, market accessibility, transportation, environmental and cultural impacts, zoning restrictions, necessary permits, and utility availability. Coordination with local planning departments is required in facility siting.

C. Economics

Review financial and economic factors such as: resource costs and locations; potential markets and prices for end products; tax incentives; effects of fuel supply and costs and fluctuations; electric power buy-back rates, if applicable; and potential financing options. Converting a facility to use biomass fuel may produce a savings from lower fuel or disposal costs. An accountant or business consultant can help prepare a business plan or loan prospectus.

2. Seek Approval for the Project

3. Prepare a Detailed Project Plan

Develop a written plan that includes detailed information on cost, design, and site considerations. This project plan will provide information on the project to potential investors and other interested parties, including local, state, and federal agencies involved in the permitting process. Use this guidebook as a starting point to understand the laws, regulations, and permitting process that might relate to a specific project. Because each

project is unique, it is usually necessary to contact federal and state agencies to obtain more detailed information on permits and other areas of compliance. Develop a project timetable, such as presented in Fig. 2. Identify other areas of compliance that may not require a permit, such as the bond an ethanol plant must have if it is to handle grain (see Commodity Dealers License). Identify areas of business regulation such as company registration, licenses, taxes, and employment information that require compliance.

4. Arrange Financing

Review the economic section of the detailed project plan to determine the project's strongest selling points. Present financial institutions with the business plan and loan prospectus. Assistance may be available from programs such as the Alternative Energy Revolving Loan Program, which provides loans to Montana homeowners, small businesses, non-profits and government entities to install alternative energy systems. For more information, contact the Montana Department of Environmental Quality Energy and Pollution Prevention Bureau. Assistance may also be available from the Montana Growth through Agriculture Program, which can fund a variety of agriculture-related projects. For more information, contact the Montana Department of Agriculture (DOA). More state and federal incentives are identified in Section 2.

5. Obtain Permits for Building, Land Use, and Environmental Controls

Contact the appropriate city or county agency for land use permits. Permit titles, forms, and procedures differ, but local governments must approve project plans before construction can begin. Site approval for a large energy project can be a long, complicated process. It can include site surveys, public hearings, and litigation.

Construction plans and building operations must be approved by either the state or local building department, depending on jurisdiction in the project area. The agency with jurisdiction may have to inspect buildings and equipment before operation begins.

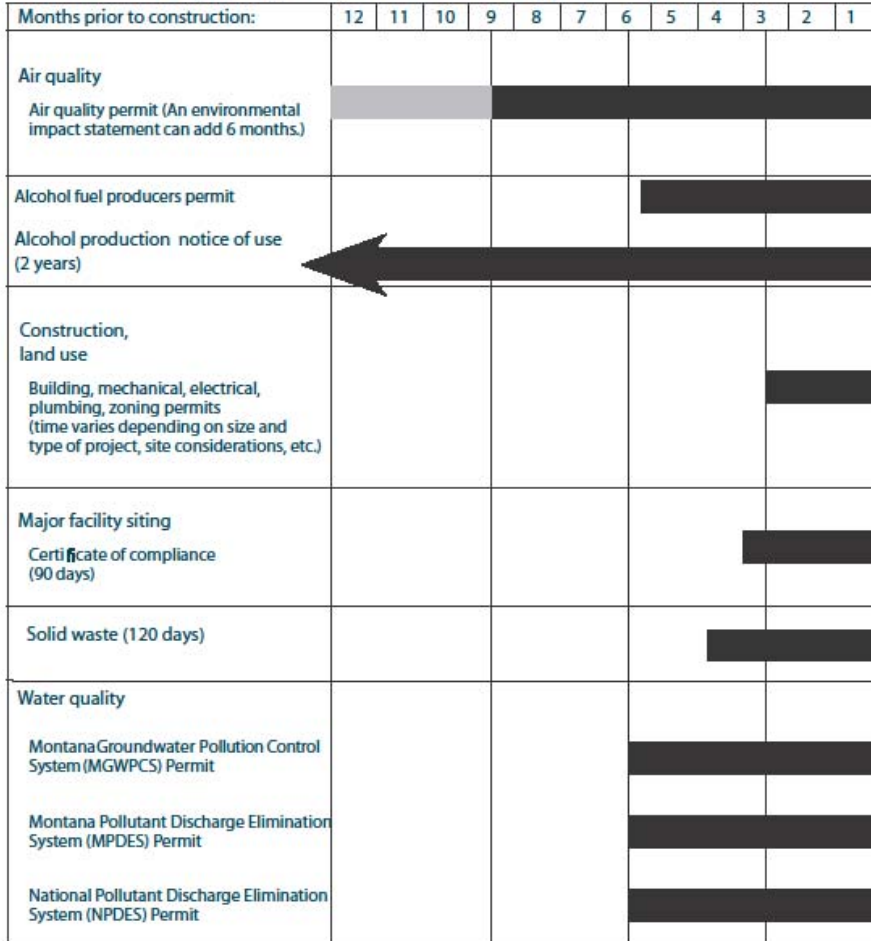
Environmental permits generally are required for air and water discharges or waste disposal. Some air and water permits may require site monitoring for data before a permit can be issued. Finally, site monitoring may be required at defined intervals after the project is initiated.

The total time required to obtain necessary project permits may vary from a few months for a small project with no potential for significant adverse environmental impact to more than two years for a large project where there is potential for significant adverse environmental impacts, as illustrated in Fig. 2. Factors that influence the time involved include delays in the land use approval process and compliance with environmental monitoring requirements.

FIGURE 2

Permit Calendar

Minimum time before project approval. (Most facilities do not require all these permits.)



Once all permits are obtained, construction can begin. Be aware that additional permits may be required during construction for specific tasks such as a permit for open burning during site clearing, a permit to operate overweight vehicles on roads, a sewage holding tank variance, or others. Coordination with the appropriate federal, state, and local agencies will help prevent unexpected delays.

6. Secure Contracts for End Products

Contact potential buyers of bioenergy products such as electric utilities, gas utilities, pellet or wood fuel distributors, and refineries. A contingency contract with a buyer will greatly increase chances to obtain financing. In the absence of a contract, a letter expressing interest from a reputable buyer would be of value. Once the required permits are obtained, financing is secured, and construction has begun, contract negotiations for supplies and sales should be finalized. The timing of product delivery should be the only item left for possible negotiation by the buyer when construction begins.

7. Finalize Facility Design

8. Complete Construction and Start-Up/Testing

Completing construction requires attention to detail. Final checklists identifying modifications to the design plans made during construction should be reviewed with the construction engineer and contractor. This on-site review is to ensure that all items noted during construction have been checked and corrected. “Turn-key” projects are those that are ready upon completion. In these instances, the engineering staff from the contracting company will be responsible for the integrity of the construction.

During start-up and testing, environmental monitoring usually is required. Requirements may include close monitoring of stack emissions and special treatment of wastes. The time to optimize the actual operation of the facility is during testing.

Section 2: Bioenergy Technologies

INTRODUCTION

Bioenergy is a valuable alternative to petroleum-based energy sources because it relies on renewable, bio-based feedstocks. Bioenergy production includes electricity, steam and mechanical power, alternative fuels and heat.

Bioenergy can be produced from many types of plant and animal feedstocks. A feedstock refers to a crop or product that can be used as — or converted into — bioenergy. Each feedstock has advantages and disadvantages that may include the quantity of usable material it produces, where it is able to be grown, how much energy and water is required for processing and how easily it can be transported.

Bioenergy feedstocks may include energy crops, agricultural crops, plant and forest residues, aquatic plants, animal wastes, and municipal wastes.

Bioenergy technologies are in various phases of development throughout the world, including right here in Montana. Both economic viability and technical development must be considered when evaluating a technology for commercial use.

This section introduces bioenergy technologies and identifies permits that may be required.

Table 1: Bioenergy Technologies

Technology	Major Biomass Resources	Energy Products
Alcohol production	Grains, starch, cellulose, food processing waste, forest and agricultural residue	Ethanol, Methanol, Butanol
Anaerobic digestion	Manure (poultry, dairy cows, swine), cellulose, food processing waste, wastewater (sewage), garbage	Biogas, methane
Combined heat and power and electric generation	Wood, densified biomass, agricultural residue, garbage, biogas, lignin	Heat, steam, electricity, mechanical power
Densification	Forest and agricultural by-products, sawmill waste	Pellets, briquettes, densified logs, cubes
Direct combustion	Wood, straw, densified biomass, garbage, agricultural byproducts, sawmill waste, lignin	Heat, steam, electricity

Esterification	Vegetable oils, animal fats, algae	Biodiesel and other bio-oil products
Gasification	Forest and agricultural byproducts, garbage	Methane, producer gas, methanol, solid-to-gas or liquid fuel
Landfill gas	Garbage	Methane, biogas
Liquefaction	Forest and agricultural byproducts, garbage, sawmill waste	Hydrocarbons (oil, gasoline, diesel), bio-oil
Oilseeds extraction and biodiesel	Agricultural crops (soybeans, safflower, canola, camelina, corn), used cooking oil and fatty acids, algae	Biodiesel, replacement for petroleum-derived oils, BioHeat®
Pyrolysis	Forest and agricultural byproducts, sawmill waste, solid waste	Producer gas, fuel oil, hydrocarbons, biochar

Formatted: Font: 9 pt, Not Bold

Table 2: Information Sources for Bioenergy Technologies

	MASS	DOA	FSA	DEQ, WQPB	DEQ, SWS	DEQ, HWP	DEQ, ARMB	DNRC	BBER	BLM	USFS
Alcohol Production	•	•	•	•	•	•		•	•	•	•
Anaerobic digestion	•	•	•	•	•	•		•		•	
Combined heat and power				•	•	•	•	•		•	•
Densification	•			•	•	•		•	•	•	•
Direct combustion				•	•	•	•	•		•	•
Gasification				•	•	•	•	•		•	•
Landfill gas				•	•	•	•	•		•	•
Liquefaction				•	•	•	•	•		•	•
Oilseeds extraction and biodiesel	•	•	•	•	•	•	•	•			
Pyrolysis				•	•	•		•		•	•

MASS — Montana Agricultural Statistics Service
 DOA — Montana Dept. of Agriculture
 FSA — Farm Services Agency
 DEQ, WQB — Montana Dept. of Environmental Quality, Water Quality Bureau
 DEQ, SWS — MT Dept. of Env. Quality, Solid Waste Section (Waste & Underground Tank Mgmt. Bureau)
 DEQ, HWP — MT Dept. of Env. Quality, Hazardous Waste Program (Waste & Underground Tank Mgmt. Bureau)
 DEQ, ARMB — Montana Dept. of Environmental Quality, Air Resources Management Bureau
 DNRC — Montana Dept. of Natural Resources and Conservation
 BBER — Montana Bureau of Business and Economic Research, University of Montana
 BLM — U.S. Dept. of Interior, Bureau of Land Management
 USFS — U.S. Dept. of Agriculture, Forest Service

ALCOHOL PRODUCTION

Feedstocks such as wheat, barley, potatoes, waste paper, sawdust, and straw contain sugar, starch, or cellulose and can be converted to alcohol by fermentation with yeast. Fuel alcohol — such as ethanol — is produced by boiling grain starch to convert to sugars, adding yeast, fermenting the sugars to alcohol, and then separating the alcohol mixture through distillation. Fig. 3 illustrates these process steps, inputs, and potential emissions.

Ethanol is ethyl alcohol, essentially 200-proof grain alcohol used as a motor fuel. An ethanol plant produces pure fuel-grade ethanol, which is subsequently blended in a percentage with gasoline to create a finished motor fuel. A small amount of gasoline or other poison is blended into the ethanol at the plant to denature it, or make it unfit for human consumption. It is very difficult for a small producer to make pure ethanol. However, homemade ethanol — sometimes called “wet” ethanol because of its high water content — can be used as motor fuel in retrofitted engines as long as it is not blended with gasoline.

Methanol is commonly called *wood alcohol*. It can be made from biomass but is most often made from natural gas. Production of methanol is one way to make use of remote natural gas that might not otherwise be brought to market. It has about half the energy content of gasoline and about three-fourths the energy content of ethanol. Methanol is highly toxic to people and corrosive to most U.S. vehicle engine parts.

Butanol is a four-carbon alcohol similar to ethanol. It has been produced on an industrial scale since World War I. Butanol is certified by the EPA as a blending component in gasoline, in concentrations up to 11 percent. Butanol is made from petroleum, but it also can be made from biomass sources. Some companies are researching processes to make butanol from renewable sources, but production in this manner is limited to date.

First-generation sugar and starch feedstocks often include seeds and grains composed largely of sugars and starch. Food wastes from fruits, sodas, and beer making can also be used. Today, these feedstocks often are used to produce the ethanol fuel we are familiar with. However, concerns about environmental impacts on land use and food crops have raised many questions about whether these feedstocks should continue to be used for non-food purposes in the future.

More than 90 percent of U.S.-made ethanol is made from corn. The two most common bioenergy feedstocks for alcohol production in Montana, though, are barley and wheat. Because fermentation produces alcohols, the higher the sugar or starch yields in the feedstock, the higher the yield of alcohols. Since fermentation can process most starch or sugar sources, other feedstocks may include barley, milo, wheat starch, potato waste, sugar beets, cheese whey, brewery and beverage waste, as well as others. Many of these feedstocks serve multiple functions as both food and fuel sources.

Agricultural and forest residues, such as straw and wood, contain cellulose and require special pre-treatment and processing to convert the cellulose and hemicellulose to sugar. Lignocellulose, found in wood and grass, must have its lignin removed to expose the cellulose and hemicellulose. This can be done enzymatically or by thermo-chemical processes. The cellulose and hemicellulose can then be processed (hydrolyzed) into sugars by thermochemical and enzymatic processes and the resulting sugars fermented into ethanol or other products. Two wood-to-ethanol plants using dilute acid and enzymatic processes operated in Washington State during World War II. Montana has one commercial cellulosic ethanol pilot project in operation — AE Biofuels, Inc. in Butte. The plant has converted barley straw, grass seed hay, and other residues into ethanol.

Another method to make alcohol is to break down these lignocellulosic materials into producer gas or other molecules. Reaction with a catalyst forms condensable alcohols. This process may be described as gasification or liquefaction, depending on process parameters.

Most of the permits, licenses, and special issues pertaining to alcohol production are summarized in Table 3. Detailed information on these permits, licenses, and special issues is provided in Sections 3, 4 and 5.

FIGURE 3

Alcohol Fermentation

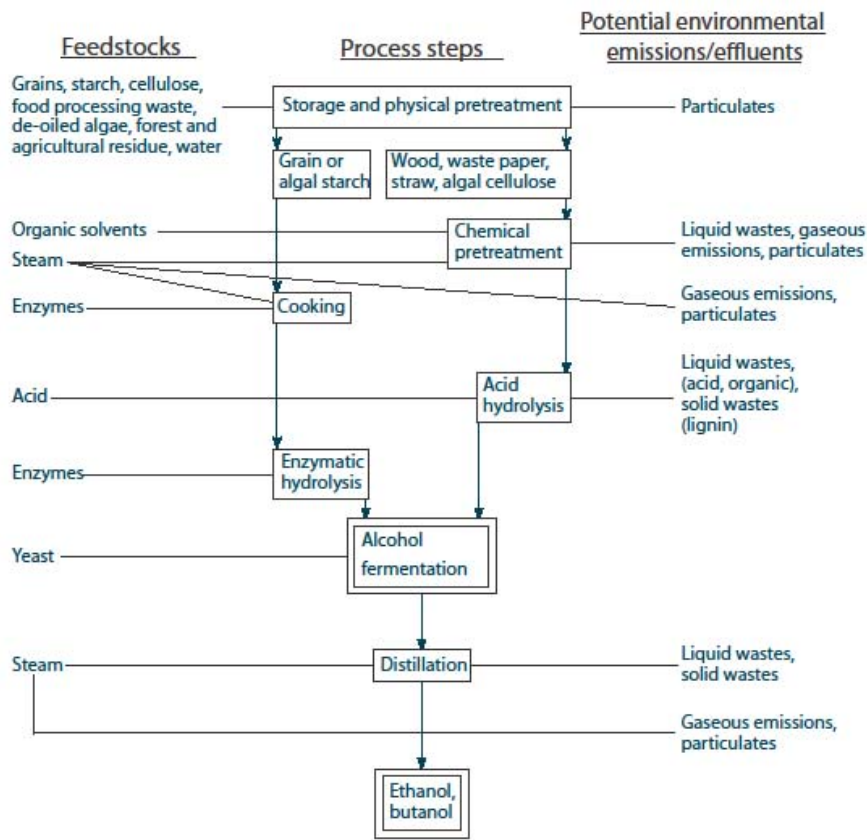


Table 3: Alcohol Production Permits, Licenses, and Special Issues

Alcohol Production

- Alcohol Fuel Producers Permit (US DOT, TTB)
- Fuel Distribution Tax (IRS)
- Montana Alcohol Fuel Producers Registration (for Credit)
- Special Fuel Distributors License (MDT)
- Commercial Device License, Meters and Weighing Devices, Weights and Measures Bureau (MDLI)
- Waiver to Use Non-Certified Alternative Fuels (EPA)

Construction and Land Use

- Boiler Operating Certificate
 - Boiler Operators License
- Building Permit
- Electrical Permit
- Floodplain and Floodway Permit
- Lakeshore Permit
- Mechanical Permit
- Occupational Safety and Health Standards
- Plumbing Permit

Special Issues

- Business Licensing Requirements
- Commodity Dealers License
- Commodity Warehouse License
- Feed Dealers Permit
- Fire Safety Inspections
- Food Manufacturing License (DPHHS Food, Drugs, and Cosmetics Bureau and local health dept) MCA 50-57
- Highways/Transportation Regulations (US DOT)
- IRS Ethanol Blender Registration (and Volumetric ‘Blender’ Tax Credit)
- Montana Petroleum Storage Cleanup Fee

- One-Stop Licensing (retail pumps, tanks, convenience stores, etc.), (DOR, 406-444-3506)
- Renewable Identification Number (RIN) Registration and Reporting
- Special Occupation Registration (US BATF)
- Testing Exemption for Non-Certified Alternative Fuels (EPA)
- IRS Tax Liability on Alcohol in an Alcohol Fuel Mixture

Environmental Considerations

- Above-Ground Storage Tank Installation
 - Above-Ground Storage Tank Program (AST) Spill Prevention, Control and Countermeasures Plan (SPCC)
 - Montana Air Quality Permit and Title V Operating Permits
 - Beneficial Water Use Permit
 - Hazardous Waste Management Facility Permit
 - Hazardous Waste Reporting Requirements
 - Montana Groundwater Pollution Control System Permit
 - Montana Pollutant Discharge Elimination System Permit
 - General Permit for Storm Water Discharges Associated with Construction Activity
 - National Pollutant Discharge Elimination System Permit
 - Odor Control
 - National Ambient Air Quality Standards
 - Solid Waste Management System License
 - Stream Bed and Land Preservation Permit
 - Stream Protection Act Permit
 - Underground Storage Tank Permit

Environmental Permits and Considerations

Alcohol production plants have high waste streams with high biological oxygen demand (BOD), high chemical oxygen demand (COD), high solids content, and varying pH. If no use is found for this “stillage,” it can create a large waste disposal problem. Acid hydrolysis of cellulose creates waste streams that require sophisticated neutralization processes. Water pollution permits will be required to discharge any of these waste streams, or possibly to pond or hold these wastes on site. (See Water Quality)

Montana air quality permits are required for a new facility or emitting unit with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) Title 17, Chapter 8, and Subchapter 7. Any facility required to obtain an air quality permit, such as an alcohol plant that burns solid fuel, must be in compliance with the National Ambient Air Quality Standards (NAAQS). (See Air Quality) This permit review would also cover Potential for Significant Deterioration (PSD), New Source Review (NSR), and particulate standards appropriate to the location.

Special considerations may have to be given to odor control. Local and county governments are responsible for enforcement of odor control rules. Any business or person using any device, facility or process that discharges odorous matter, vapors, gases, dusts or combination of these that creates odors is subject to regulation. That person must provide, properly install, maintain and operate odor control devices or procedures as specified by local authorities.

Small producers of alternative fuels not yet certified for use by EPA under the Clean Air Act, as well as any vehicle modification for use of any of these fuels, must apply for a Testing Exemption from EPA before beginning the modification.

Solid and hazardous waste regulations are becoming more stringent, and cleanup costs may be imposed if improper disposal occurs. Waste generators are legally liable for proper disposal of waste. Solid waste disposal permits are not required if wastes, such as unmarketable distillers grains, are disposed of at licensed facilities. If the waste is classified as a hazardous waste, there are detailed reporting requirements for disposal. Any facility storing solid waste, such as “hog” fuel (chipped or ground wood fuel) or refuse-derived fuel may require a solid waste management system license. (See Waste Management) For more information on specific wastes or facilities, contact DEQ, Waste and Underground Tank Management Bureau, Solid Waste Section.

Above-ground storage tanks must be properly installed in accordance with manufacturer’s specifications/recommendations; the appropriate recommended practices adopted in ARM 17.57.104; and various Uniform Fire Code requirements. While no permits are required, owners of new tank installations should send to their regional Fire Marshal’s office: a copy of the site plan, the planned number of tanks, the number of gallons each tank holds, and the type of valve (fire valves are required for all flammable liquids.) The regional Fire Marshal’s office will review the plan and subsequently determine whether the planned installation meets necessary requirements. Regional offices are listed in Appendix B under Montana Department of Justice.

The U.S. Environmental Protection Agency (EPA) administers and approves Spill Prevention, Control, and Countermeasure (SPCC) Plans for bulk petroleum storage facilities. Federal regulations require owners or operators of non-transportation-related bulk petroleum storage facilities having an aggregate aboveground storage capacity greater than 1,320 gallons, or a buried storage capacity greater than 42,000 gallons, to prepare and maintain a site-specific SPCC Plan for their facility. An SPCC Plan is a detailed, facility-specific, written description of how a facility's operations comply with the requirements of the Oil Pollution Prevention Regulation 40 CFR 112. These requirements include measures such as secondary containment, facility drainage, containment dikes and barriers, sump and collection systems, retention ponds, curbing, tank corrosion protection systems, and liquid level devices. More information is available at <http://www.deq.mt.gov/LUST/techguiddocs/techguid17.pdf> or from EPA.

Construction and Land Use Permits

Local permits are required for different phases of planning and construction. Fire and explosion safety are important considerations at alcohol production plants and may even affect insurance coverage. Alcohol is classified as a class 1B flammable liquid — the same as gasoline — and presents fire and explosion hazard. Grain handling and milling presents dust explosion hazards. Explosion-proof equipment and wiring are necessary in areas where alcohol is handled and grain dust is present.

Special Issues

Alcohol producers must properly qualify the alcohol plant and obtain a permit from the U.S. Department of Treasury, Alcohol and Tobacco Tax and Trade Bureau (ATTB). Bonding requirements vary depending on the size of the plant. Although the special occupational tax that was previously in force has been repealed, ATTB still has detailed reporting requirements in place regarding production, use and distribution of alcohol. Application procedures are detailed in Section 4.

Persons who blend alcohol with gasoline, diesel fuel or kerosene to produce an alcohol fuel mixture outside the bulk transfer/terminal system must pay tax on the volume of alcohol in the mixture when the mixture is sold or removed. See Form 720 at www.irs.gov/pub/irs-pdf/f720.pdf to report this tax. You must be registered by the IRS as a blender. See Form 637 at www.irs.gov/pub/irs-pdf/f637.pdf.

A Feed Dealers Permit from the Montana Department of Agriculture (DOA) is required for distillers dried grains or other co-products that are distributed as commercial feed in Montana. The commercial feed must be registered and comply with labeling format and other requirements as stated in DOA rules.

Additionally, anyone marketing or housing grain may need to obtain a Commodity Dealers License or a Commodity Warehouse License. (See Section 2)

Prior to doing business in Montana, every fuel alcohol distributor must obtain a license from the Montana Department of Transportation (MDT), Fuel Tax Management and Analysis Bureau. Licensed distributors are required to meet monthly reporting

requirements as set forth by MDT. The information provided in these reports allows MDT to assess taxes on the fuel distributed and also qualifies the distributor for a tax incentive on each gallon of ethanol produced from Montana agricultural products.

Small producers of alternative fuels not yet certified for use by EPA under the Clean Air Act, including wet ethanol and higher than E10 blends of fuel, as well as any vehicle modification for use of any of these fuels, must apply for a Testing Exemption from EPA before beginning the modification.

Under the EPA's Renewable Fuels Standard (RFS) program, every gallon of renewable fuel produced or imported into the United States must be assigned Renewable Identification Numbers (RINs). RINs are intended to track the amount of renewable fuels, their source (corn or cellulose) and amount actually blended into gasoline or otherwise used as a motor vehicle fuel. Each year, refiners, blenders and importers must acquire sufficient RINs to demonstrate compliance with their volume obligation. For more information, see <http://www.epa.gov/otaq/renewablefuels/420f07041a.pdf>.

As allowed by law (75-11-301, MCA), gasoline distributors who blend alcohol with gasoline and distribute it in Montana are required to pay the Montana Petroleum Storage Cleanup Fee of \$.0075 per gallon of gasoline, special fuel, dyed special fuel, aviation, and jet fuel. This fee is collected by Montana Department of Transportation and then sent to the Department of Environmental Quality for the leaking underground storage tanks fund. DEQ administers the payout of this fund to qualified owners of leaky tanks that require clean up. If the fuel is exported directly from the terminal out of Montana, no cleanup fee is required. However, if the fuel has come to rest in any storage tanks in Montana, and then later is exported out of Montana, the cleanup fee is due. Further, a permit is required to place a regulated substance — including ethanol, methanol, and biodiesel — in an underground storage tank and to operate that tank.

The Montana Department of Transportation (MDT) regulates various aspects and transportation and activities adjacent to highways. Permits are required for: special fuels; restricted routes or loads; companies that operate commercial motor vehicles in interstate or international commerce; highway rights-of-way, encroachments, and approaches; utility mains; outdoor advertising visible from highways; and oversized vehicles and loads. MDT's Motor Carrier Services (MCS) division is responsible for the State of Montana's oversize/overweight permit program, as well as issuing special fuel use licenses, motor carrier permits, and assessing gross vehicle weight fees. In addition, certain federal requirements, such as USDOT number, may apply. (See Highways/Transportation)

Montana Incentives

Property Tax Exemptions — Real and personal property used in fuel alcohol production facilities may be eligible for property tax reductions or exemptions. For more information, contact the Montana Department of Revenue, Property Assessment Division.

Ethanol Production Incentive — Ethanol producers are entitled to a tax incentive of \$0.20 per gallon of ethanol produced from Montana agricultural products, or produced from non-Montana agricultural products when Montana products are unavailable. The tax incentive is available to a facility for the first six years from the date that production begins. Ethanol eligible for the incentive must be blended with gasoline for sale as ethanol-blended gasoline in Montana, exported from Montana for sale as ethanol-blended gasoline, or used in the production of ethyl tertiary butyl ether for use in reformulated gasoline. Written notice with specific details must be given to MDT two years before the incentive is claimed. For more information, contact the Montana Department of Transportation (MDT), Fuel Tax Management and Analysis Bureau. (See MCA 15-70-522)

Renewable Energy Property Tax Incentive — Property tax rate abatements are available for new investments in facilities that manufacture, research or develop products related to ethanol. These incentives last for 15 years after facility start-up or the related equipment is purchased. The total time of the qualifying period may not exceed 19 years. (See MCA 15-24-3111)

Alternative Fuel Vehicle (AFV) Conversion Tax Credit — an income tax credit is available to businesses or individuals for up to 50 percent of the equipment and labor costs for converting vehicles to operate on fuels containing at least 85 percent ethanol or methanol. A maximum credit of \$500 is available for the conversion of vehicles with a Gross Vehicle Weight Rating (GVWR) of 10,000 pounds (lbs) or less and \$1,000 for vehicles with a GVWR of more than 10,000 lbs. The credit must be applied in the year the conversion is made. (See MCA 15-30-164)

NorthWestern Energy USB Renewable Energy Fund — NorthWestern Energy periodically provides funding to its customers for renewable energy projects through the Universal System Benefits (USB) Program. A guide to funding renewable energy projects, *Bright Ideas in Renewable Energy* (<http://www.northwesternenergy.com/documents/E+Programs/E+RenewableEnergy.pdf>) explains the program and the request for proposal (RFP) process.

Federal Incentives and Assistance

Small Ethanol Producer Tax Credit — a small ethanol producer (not more than 60 million gallons of productive capacity of any type of alcohol) that is registered with the Internal Revenue Service (IRS) may be eligible for a tax incentive in the amount of \$0.10 per gallon of ethanol. The incentive applies only to the first 15 million gallons of ethanol produced in a tax year and is allowed as a credit against the producer's income tax liability. Under current law, this incentive expires December 31, 2010. For more information, see IRS Publication 510 and IRS Forms 637 and 6478, which are available via the IRS website. (Reference: 26 U.S. Code 40)

- ***Volumetric Ethanol Excise Tax Credit (VEETC)*** — An ethanol blender registered with the IRS may be eligible for a tax incentive in the amount of \$0.45 per gallon of pure ethanol (minimum 190 proof) blended with gasoline. Under current law, this

incentive expires December 31, 2010. For more information, see IRS Publication 510 and IRS Forms 637, 720, 4136, 6478, and 8849, which are available via the IRS website. (Reference: Public Law 110-234, and 26 U.S. Code 6426, Forms 637, 720, 8849, 8864, 4136 and others are available at: <http://www.irs.gov/formspubs/lists/0..id=97817.00.html>)

Cellulosic Biofuel Producer Tax Credit — a cellulosic biofuel producer registered with the IRS may be eligible for a tax incentive in the amount of up to \$1.01 per gallon. The incentive is allowed as a credit against the producer's income tax liability. Under current law, only qualified fuel produced in the U.S. between January 1, 2009, and December 31, 2012, for use in the U.S., may be eligible. For more information, see IRS Publication 510 and IRS Forms 637 and 6478, which are available via the IRS website. (Reference Public Law 110-234, Section 15321, and 26 U.S. Code 40)

Alternative Fuel Vehicle Refueling Property Credit — qualified alternative fuel vehicle refueling properties are eligible for a federal tax credit. The credit applies to any property (other than a building or its structural components) used to store or dispense alternative fuel into the fuel tank of a motor vehicle propelled by the fuel, but only if the storage or dispensing is at the point where the fuel is delivered into the tank. For personal property, the credit is generally the lesser of 50 percent of the property's cost, or \$50,000. The credit is claimed on IRS Form 8911. More information is available at <http://www.irs.gov/publications/p17/ch37.html>.

Biomass Crop Assistance Program — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage, and transportation of eligible material for use in a biomass conversion facility. The rules for BCAP are currently under revision. More information is available at: www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

Commodity Credit Corporation — The Commodity Credit Corporation (CCC) is a government-owned and operated entity created to stabilize, support and protect farm income and prices. The CCC is managed by the U.S. Department of Agriculture and also helps maintain balanced and adequate supplies of agricultural commodities and aids in their orderly distribution. The CCC Charter Act, as amended, aids producers through loans, purchases, payments and other operations, and makes available materials and facilities required in the production and marketing of agricultural commodities. The CCC Charter Act also authorizes the sale of agricultural commodities to other government agencies and to foreign governments and the donation of food to domestic, foreign, or international relief agencies. The CCC also assists in the development of new domestic and foreign markets and marketing facilities for agricultural commodities. For more information on available assistance through CCC, visit <http://www.fsa.usda.gov/FSA/webapp?area=about&subject=landing&topic=sao-cc-ac>

ANAEROBIC DIGESTION

Anaerobic digestion converts organic matter to a mixture of methane, the major component of natural gas, and carbon dioxide (CO₂). This mixture is often called *Biogas*. Biomass, such as manure, straw, sewage or food processing wastes is fed into a digester tank where it resides in the absence of air. There microbes and bacteria break down the biomass to biogas, liquid effluent, and sludge, as shown in Fig. 4. The methane content of biogas can be as high as 80 percent if the reactor is designed for energy output. At present, the digestion process is used primarily to process animal manure and municipal waste, but also can be used to process most cellulose materials. The methane produced can be used for heating, process heat, mechanical energy or electrical generation.

The cities of Billings, Bozeman, Great Falls, Helena, Kalispell, and Missoula (see Appendix A) have functioning methane digester projects that produce biogas from sewage treatment operations. The biogas is used to fire boilers, or to fuel modified (spark-ignition) diesel engine generators, or to fire Stirling engines with heat recovery. Plants at Billings and Great Falls used the cooling water warmed by the biogas-fired diesel engine to heat digesters or to pre-heat boiler feed water. In September 2009, the city of Helena began using two Stirling engines fired by biogas to generate 43 kW per unit. An additional 250,000 Btu/hr heats the digesters. The biogas also can be used to directly fuel the digester boiler if the methane content is greater than 50 percent. A third Stirling engine is being considered to reduce the need for the boiler to back-up natural gas capacity.

Huls Dairy Farm in Corvallis is currently the only operating on-farm anaerobic digester and combined heat and power plant in Montana. The system came online in the spring of 2009 and produces enough on-farm generated power (50 kW) to run the entire dairy operation and one home while heating the feeding and milking areas.

Most of the permits, licenses, and special issues pertaining to biogas production are summarized in Table 4. Detailed information on these permits, licenses, and special issues is provided in Sections 3, 4, and 5.

FIGURE 4

Anaerobic Digestion

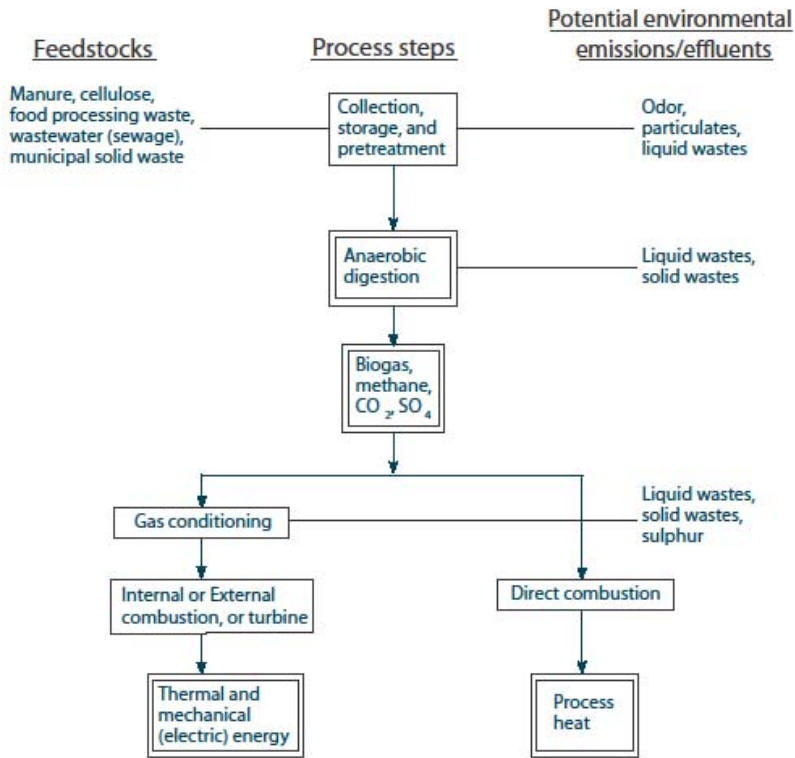


Table 4: Anaerobic Digestion Permits, Licenses, and Special Issues

Construction and Land Use Permits

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Floodplain and Floodway Permit (DNRC)
- Lakeshore Permit (Local govt.)
- Mechanical Permit (DOC or local bldg. dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local bldg. dept.)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPS) Permit (DEQ)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)
- General Permit for Storm Water Discharges Associated with Construction Activity (DEQ)
- National Pollutant Discharge Elimination System (NPDES) Permit (DEQ)
- Odor Control (Local govt.)
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)
- Stream Bed and Land Preservation Permit (310 Permit, normally local conservation dist.)

Special Issues

- Business Licensing Requirements
- Commodity Dealers License
- Commodity Warehouse License
- Electrical Energy Producer's Tax
- Feed Dealer's Permit
- Feed and Fertilizer License, Label and Inspection
- Fire Safety Inspections
- Montana Petroleum Storage Cleanup Fee
- USDA NRCS (water impoundment/containment approval)

Environmental Considerations

- Montana Air Quality Permit/Title V Operating Permits (DEQ)
- Beneficial Water Use Permit (DNRC)

Environmental Permits and Considerations

The main environmental concern with biogas digesters is that digested sludge and wastewater cannot be discharged into state waters without a permit. For example, an animal confinement facility meeting certain thresholds is a point source of pollution and may require a Montana Pollutant Discharge Elimination System Permit. (See Water Quality)

Special considerations may have to be given to odor control. Local and county governments are responsible for enforcement of odor control rules. Any business or person using any device, facility, or process that discharges odorous matter, vapors, gases, dusts or combination of these that creates odors is subject to regulation. That entity must provide, properly install, maintain and operate odor control devices or procedures as specified by local authorities.

Montana air quality permits are required for a new facility or emitting unit with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) Title 17, Chapter 8, and Subchapter 7. Any facility required to obtain an air quality permit must be in compliance with the National Ambient Air Quality Standards (NAAQS). (See Air Quality) For example, a 500 kW engine-generator fired by biogas needs an air quality permit for the exhaust. This permit review would also cover Potential for Significant Deterioration (PSD), New Source Review (NSR), and particulate standards appropriate to the location. If a facility discharges particulates from raw materials such as digester sludge, it may need to comply with the National Ambient Air Quality Standards (NAAQS) established by EPA, which include PM-10 and/or PM-2.5 standards for particulate matter with an aerodynamic diameter of 10 or 2.5 microns, respectively, or less. (See Air Quality)

Solid and hazardous waste regulations are becoming more stringent, and cleanup costs may be imposed if improper disposal occurs. Waste generators are legally liable for proper disposal of waste. Solid waste disposal permits are not required if wastes are disposed of at licensed facilities. If the waste is classified as hazardous, detailed reporting requirements for disposal must be met. Any facility storing solid waste, such as hog fuel or refuse-derived fuel, may require a Solid Waste Management System License. For a definition of solid waste and information on the law, rules and exceptions, see Waste Management. For more information on specific wastes and facilities, contact DEQ, Solid Waste and Underground Tank Management Bureau, Solid Waste Section.

Construction and Land Use Permits

A biogas digester and biogas-handling equipment must comply with all mechanical, electrical, plumbing and building codes. (See Building, Mechanical, Electrical, and Plumbing Permits) Local authorities often administer land use regulations and restrictions that may affect location of a bioenergy project. Choosing a site for plant may be limited by zoning regulations, floodplain or wetland restrictions, or lakeshore preservation requirements. Local governments also establish and enforce local air quality programs that could impact an anaerobic digestion project. (See Urban Areas/Municipalities)

Special Issues

Anaerobic digestion projects that produce electricity may be required to pay the Electrical Energy Producers Tax, a quarterly tax imposed on any business engaged in the generation of electrical energy. The tax is 2 cents per kilowatt-hour of electrical energy generated, manufactured or produced and is payable to the Montana Department of Revenue.

Montana Feed and Fertilizer License, Label and Inspection: An anaerobic digester operator will need to obtain a permit from the Montana Department of Agriculture (DOA) to sell or distribute the digester sludge, solids or effluent as a fertilizer. Direct land application may also require water quality permits as described above.

Montana Incentives

Property Tax Abatement for Production and Manufacturing Facilities — property tax abatement may be available for new renewable energy production facilities and renewable energy research and development equipment. Eligible facilities and equipment are assessed at 50 percent of their taxable value. Qualifying renewable energy manufacturing facilities are those: (1) that produce materials, components or systems to convert solar, wind, geothermal, biomass, biogas or waste heat resources into useful energy; and (2) whose annual production of renewable energy equipment makes up at least half of the facility's total production. (Refer to MCA 15-24-3111)

Renewable Energy Systems Exemption — Montana's property tax exemption for recognized non-fossil forms of energy generation including anaerobic digestion, may be claimed for 10 years after installation of the property. The exemption is allowed for single-family residential dwellings up to \$20,000 in value and for multifamily residential dwellings or a nonresidential structure up to \$100,000 in value. Use state tax form ENRG-B. (Refer to MCA 15-32-201, *et seq*)

NorthWestern Energy USB Renewable Energy Fund — NorthWestern Energy periodically provides funding to its customers for renewable energy projects through the Universal System Benefits (USB) Program. A guide to funding renewable energy projects, *Bright Ideas in Renewable Energy* (<http://www.northwesternenergy.com/documents/E+Programs/E+RenewableEnergy.pdf>) explains the program and the request for proposal (RFP) process.

Federal Incentives and Assistance

Renewable Electricity Production Tax Credit (PTC) — Commercial and industrial anaerobic digestion systems with a minimum capacity of 150 kW may be eligible for the PTC. The PTC is a per-kilowatt-hour tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year. The credit amounts to 2.1 cents per kWh for wind, geothermal, closed-loop biomass; and 1 cent per kWh for other eligible technologies. The PTC generally applies to the first 10 years of a facility's operation. For more information, visit <http://www.irs.gov/pub/irs-pdf/f8835.pdf>

Under the American Recovery and Reinvestment Act of 2009, taxpayers eligible for the PTC may receive a grant from the U.S. Treasury Department instead of taking the PTC

for new installations. Grant applications must be submitted by October 1, 2011. More information is available in Notice 2009-52 (<http://www.irs.gov/pub/irs-drop/n-09-52.pdf>), issued by the Treasury Department in June 2009, and <http://www.treas.gov/recovery/1603.shtml>.

Qualified Energy Conservation Bonds (QECCBs) — QECCBs may be used by state, local and tribal governments to finance certain types of energy projects. Research, development applications and demonstration projects using anaerobic digestion may qualify. These bonds are issued with a 0 percent interest rate. The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest. Credits exceeding a bondholder's tax liability may be carried forward to the succeeding tax year, but cannot be refunded. For more information see <http://www.irs.gov/pub/irs-drop/n-09-29.pdf>

USDA - Rural Energy for America Program (REAP) Grants — Grants or loans may be available for agricultural producers and rural small businesses for renewable energy systems and renewable energy development assistance. Qualified technologies include anaerobic digestion. For more information see <http://www.rurdev.usda.gov/rbs/busp/bprogs.htm>.

Renewable Energy Production Incentive (REPI) — new anaerobic digestion facilities may qualify for annual incentive payments of 1.5 cents per kWh in 1993 dollars (indexed for inflation). These incentive payments are available for the first 10-year period of the facility's operation but are subject to the availability of annual appropriations in each federal fiscal year of operation. REPI was designed to complement the federal PTC, which is available only to businesses that pay federal corporate taxes. For more information, see <http://apps1.eere.energy.gov/repil/>.

- *Biomass Crop Assistance Program* — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage, and transportation of eligible material for use in a biomass conversion facility. The rules for payments are currently under revision. More information is available at: www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

COMBINED HEAT AND POWER (CHP) and ELECTRIC GENERATION

Technology Overview

Combined heat and power (also called *cogeneration*) is the simultaneous production of more than one form of energy, usually thermal and mechanical, using a single fuel and facility, as shown in Fig. 5. Furnaces, boilers, or engines fueled with biomass can cogenerate electricity for on-site use or sale. Biomass cogeneration has more potential growth than biomass generation alone because cogeneration produces both thermal and mechanical energy, such as electricity.

A combined heat and power plant may be either a “topping” cycle or a “bottoming” cycle. A topping cycle is one where electricity is generated first and the waste heat is used for other processes. A bottoming cycle is one where the heat is used for processes and waste heat is used to generate electricity. Electric power generation does not ordinarily utilize heat from fuel. An electric power generator can become a cogeneration facility by using the heat from electric generation for process heat or thermal energy. For example, at least one project uses the heat remaining after electricity generation to power adsorption chillers for cooling. Increased fuel efficiency and savings in fuel and energy costs are the major incentives for considering combined heat and power technologies.

Montana’s wood products industry uses combined heat and power to dispose of bark and sawdust produced in its lumber and paper operations. These operations burn wood waste and/or biomass sludge to generate steam. The steam powers a turbine electricity generator. The reduced steam pressure and/or temperature are captured for use as a process heat. The recently-closed Smurfit-Stone linerboard plant at Frenchtown employed this type of system. Eagle Stud Mill in the Flint Creek Valley uses waste wood to generate steam that is used in a dry kiln, and then powers one or two reciprocating engines to condense the steam and produce electricity. The electricity generated is used on-site.

Indirect combustion Organic Rankine cycle engines and Stirling engines may also be used in combined heat and power applications. Organic Rankine cycle engines are similar to steam engines, but use a different working fluid and operate at lower temperatures. Consequently, they are more appropriate in bottoming cycles. Stirling engines use air or another gas such as hydrogen as the working fluid and can be used in either topping or bottoming cycles. Microturbines burn fuel to make a hot gas or steam that generates electricity. The exhaust is hot enough to be used in many processes. These processes do not generally require a high pressure boiler operator’s license. Another potential for small thermal includes biomass fired boilers that heat oil. These systems can generate electricity and heat a building without high pressure requirements.

Most of the permits, licenses, and special issues pertaining to biomass combined heat and power in Montana are summarized in Table 5. Detailed information on these permits, licenses, and special issues is provided in Sections 3, 4, and 5.

FIGURE 5

Combined Heat and Power (Cogeneration)

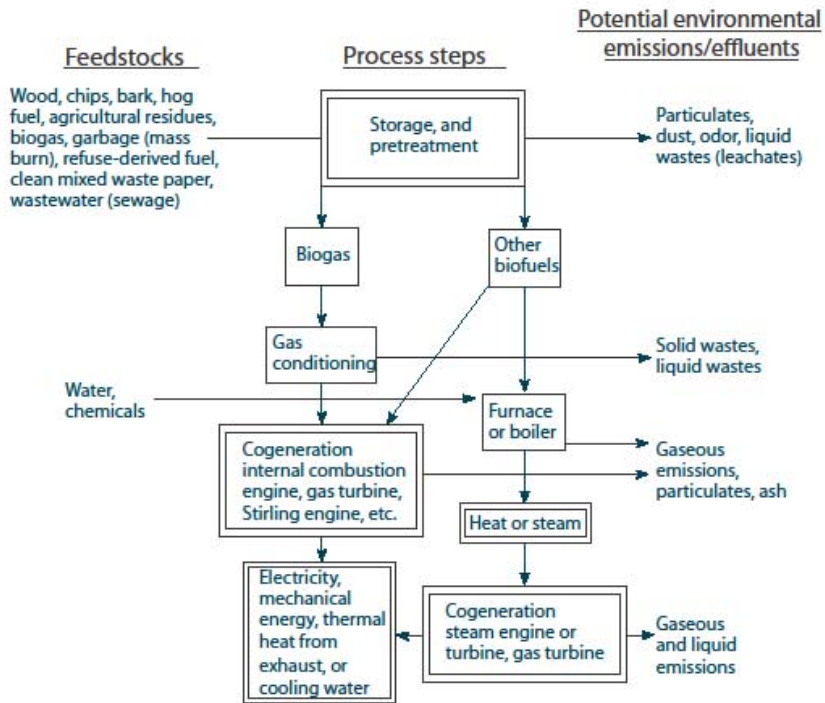


Table 5: Combined Heat and Power and Electric Generation Permits, Licenses and Special Issues

Construction and Land Use

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Lakeshore Development Permit (Local govt.)
- Mechanical Permit (DOC or local building dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local building dept.)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)
- General Permit for Storm Water Discharges Associated with Construction Activity
- National Pollutant Discharge Elimination System (MPDES) Permit
- Odor Control (Local govt.)
- National Ambient Air Quality Standards (NAAQS)
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)
- Stream Bed and Land Preservation Permit (310 Permit, normally, local conservation dist.)

Special Issues

- Business Licensing Requirements (DOC and local govt.)
- Electrical Energy Producers Tax (DOR)
- Fire Safety Inspections (DOJ, state fire marshal, municipal fire chief, county sheriff)

Environmental Considerations

- Montana Air Quality Permit/Title V Operating Permits (DEQ)
- Beneficial Water Use Permit (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPCS) Permit (DEQ)
- Montana Major Facility Siting Act Certificate of Compliance (DEQ)

Environmental Permits and Considerations

Biomass-fired furnaces and boilers must maintain compliance with MAAQS/NAAQS and air quality regulations. A permit may be required from the Department of Environmental Quality, Air Resources Management Bureau (ARMB) for fuel-burning furnaces, boilers or other facilities, depending on size, fuel and other factors. The rule concerning particulate emissions from new fuel-burning installations, shown in Fig. 13, may be applied, but Best Available Control Technologies (BACT) applies to all regulated pollutants for applicable bioenergy projects. Because BACT may be more stringent than values shown in Fig. 13, all applicable sources must utilize BACT first to be sure of meeting emission requirements. (See Air Quality)

For major sources or those on federal or tribal lands, other federal permitting requirements may apply. Prevention of Significant Deterioration (PSD) standards and the National Ambient Air Quality Standards (NAAQS) apply to major new sources of air pollution. (See Air Quality) If a facility burns solid fuel, it may be required to comply with EPA's NAAQS. If a facility produces more than 25 megawatts (MW) and sells more than one-third of its power to a utility, it may be required to comply with Title IV acid rain provisions in the Clean Air Act. Some Montana municipalities have adopted local air pollution control programs. (See Urban Areas/Municipalities)

Solid and hazardous waste regulations are becoming more stringent, and cleanup costs may be imposed for improper disposal. Waste generators are legally liable for proper disposal of waste. Solid waste disposal permits are not required if wastes are disposed of at licensed facilities. If the waste is classified as hazardous, detailed reporting requirements for disposal must be met. Any facility storing solid waste, such as wood waste or refuse-derived fuel, may require a Solid Waste Management System license. Discharges of pollutants into state waters from a point source to either ground water or a solid waste section may require a Montana Groundwater Pollution Control System Permit. (See Waste Management and Water Quality)

A Certificate of Compliance may be required from the Department of Environmental Quality for certain transmission lines greater than 69 kV and more than 10 miles in length, or for certain pipelines with inside diameters greater than 25 inches. The Montana Major Facility Siting Act does not generally regulate electricity generation from biomass plants. (See MCA 75-20-104(8)) Contact DEQ's Environmental Management Bureau for additional guidance.

Construction and Land Use Permits

For projects proposed in urban areas, the local planning office must be consulted to determine zoning requirements and the land use and building permits required. (See Building, Mechanical, Electrical & Plumbing Permits and Urban Areas/Municipalities) Boilers and boiler operators must be properly licensed.

Special Issues

A combined heat and power or small power production facility must be certified as a qualifying facility (QF) in order to sell the electricity it generates to a utility. A small QF must meet certain requirements as stated in Montana law, principally that it produces less than 80 MW. (See MCA 69-3-601) The Montana Public Service Commission determines the rates and conditions of a contract for electricity between a QF and a utility. (See Electric Generation and Combined Heat and Power)

Combined heat and power projects that produce electricity may be required to pay the Electrical Energy Producers Tax, a quarterly tax imposed on any business engaged in the generation of electrical energy. The tax is \$.0002 per kilowatt-hour of electrical energy generated, manufactured or produced and is payable to the Montana Department of Revenue.

Montana Incentives

Property Tax Abatement for Production and Manufacturing Facilities — new electric generation and combined heat and power facilities that offset a portion of the carbon dioxide produced may be eligible for a 50 percent property tax abatement. Fifty percent of the taxable value is assessed for the construction period and the first 15 years after the facility commences operation, not to exceed 19 years. All production facilities and manufacturing facilities must be approved by DEQ in order to qualify for the abatement. (Refer to MCA 15-24-3111)

NorthWestern Energy USB Renewable Energy Fund — NorthWestern Energy periodically provides funding to its customers for renewable energy projects through the Universal System Benefits (USB) Program. A guide to funding renewable energy projects, *Bright Ideas in Renewable Energy*, (<http://www.northwesternenergy.com/documents/E+Programs/E+RenewableEnergy.pdf>) explains the program and the request for proposal (RFP) process.

Federal Incentives and Assistance

Business Energy Investment Tax Credit (ITC) — combined heat and power (CHP) systems put into service after October 3, 2008, may qualify for the ITC. The credit is equal to 10 percent of expenditures, with no maximum limit stated. Generally, CHP systems up to 50 megawatt (MW) in capacity that exceed 60 percent efficiency are eligible for the credit. CHP systems that use biomass for at least 90 percent of the system's energy source are eligible, but the credit may be reduced.

Under the American Recovery and Reinvestment Act of 2009, taxpayers eligible for the ITC may receive a grant from the U.S. Treasury Department instead of taking the ITC for new installations. Grant applications must be submitted by October 1, 2011. More information is available in Notice 2009-52 (<http://www.irs.gov/pub/irs-drop/n-09-52.pdf>) issued by the Treasury Department in June 2009, and <http://www.treas.gov/recovery/1603.shtml>.

Modified Accelerated Cost-Recovery System (MACRS) — CHP businesses may recover investments in certain property through depreciation deductions, ranging from 3 to 50 years, over which the property may be depreciated. For more information on the federal MACRS, see IRS Publication 946, IRS Form 4562: Depreciation and Amortization, and Instructions for Form 4562 at <http://www.irs.gov/>.

USDA - Rural Energy for America Program (REAP) Grants — Grants or loans may be available for agricultural producers and rural small businesses for renewable energy systems and renewable energy development assistance. Qualified technologies include combined heat and power. For more information, see <http://www.rurdev.usda.gov/rbs/busp/bprogs.htm>.

- *Biomass Crop Assistance Program* — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage, and transportation of eligible material for use in a biomass conversion facility. Rules for the types of payments are currently under revision. More information is available at: www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

DENSIFICATION

Dried compressed pellets, briquettes, densified logs and cubes are called *densified biomass fuel* and can be made from wood wastes, agricultural by-products, waste paper, trash or refuse-derived fuel as illustrated in Fig. 6. Densification is a fuel-processing technology used to reduce the volume of raw biomass to make it easier to use or transport. This process reduces biomass to particles less than one-quarter inch that have been dried to 10 to 15 percent moisture content, and then compressed or extruded. The material is between one-quarter and one-third of the original volume of the feedstock. The heat and pressure from the compression or extrusion soften the lignin bonds in the biomass to reform and maintain the densified shape. The moisture in the feedstock becomes steam and acts as a lubricant in the compression die to release the densified biomass. Some processes use additional binders or lubricants. Different machines produce various sizes of densified biomass, ranging from pea-sized pellets to logs 6 inches in diameter and 12 inches long. The densified biomass can be used in residential wood stoves, furnaces and fireplaces, or in industrial furnaces and boilers for process heat, steam or electric generation.

Only forest and sawmill residues have been pelletized in Montana to date. Currently, several pellet mills are active in Montana, including Eureka Pellet Mills, Inc., HooDoo Mountain Pellets (recently closed) and Western Bee Supplies, Inc. In-state production of mill residue in Montana has fallen from about 1.5 million dry tons annually to 1.0 million dry tons between 2004 and 2008, largely due to ongoing losses of milling capacity, declining timber harvest volumes and increased milling efficiency, according to Todd Morgan at the Bureau of Business and Economic Research. Between 99 and 100 percent of mill residue in Montana is utilized.

Residential use of wood pellets has grown due the high quality and low price of pellets from Montana mills and other mills in the northwest region. Current tax incentives for biomass heating systems may also contribute to the growth. Some communities in western Montana restrict solid fuel “stick-wood” burning units to meet air quality standards. Wood pellet stoves are commonly cleaner-burning and are permissible under current air quality regulations.

The Montana DNRC Fuels for Schools and Beyond program also creates increased demand for wood pellets. Two of the ten small-scale biomass boilers operating under the program collectively consume 310 dry tons of commercial wood pellets each year from Eureka Pellet Mills in Superior. Commercial wood pellets allow up to 3 percent ash content compared to premium pellets for residential use at less than 1 percent ash. Pellets were chosen at the two schools due to lack of storage space (for wood fuel) and to meet emissions. The remaining eight facilities use an average total of 8,000 dry tons of other woody biomass per year.

Most of the permits, licenses, and special issues pertaining to densification in Montana are summarized in Table 6. Detailed information on these permits, licenses, and special issues is provided in Sections 3, 4, and 5.

FIGURE 6

Densification

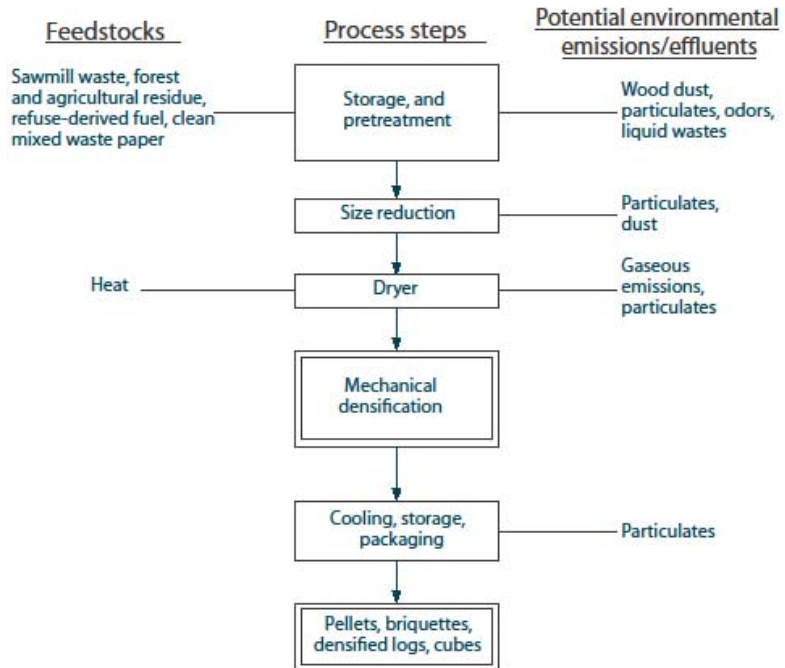


Table 6: Densification Permits, Licenses, and Special Issues

Construction and Land Use Permits

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Floodplain and Floodway Permit (DNRC)
- Lakeshore Permit (Local govt.)
- Mechanical Permit (DOC or local bldg. dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local bldg. dept.)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)
- General Permit for Storm Water Discharges Associated with Construction Activity (DEQ)
- National Pollutant Discharge Elimination System (NPDES) Permit
- Odor Control (Local govt.)
- National Ambient Air Quality Standards
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)
- Stream Bed and Land Preservation Permit (310 Permit, normally local conservation dist.)

Special Issues

- Business Licensing Requirements
- Electrical Energy Producers Tax
- Fire Hazard Reduction Permit
- Timber Sales Permit
- Pellet Fuels Institute Standards, ASTM

Environmental Considerations

- Montana Air Quality Permit/Title V Operating Permits (DEQ)
- Beneficial Water Use Permit (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPS) Permit (DEQ)

Environmental Considerations

Pellet plants and other biomass-processing plants have the potential to emit air pollution during the drying process. The location of a facility and the type of combustion source and equipment will determine the permit requirements. Montana air quality permits are required for a new facility with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) Title 17, Chapter 8, and Subchapter 7. Any facility required to obtain an air quality permit must be in compliance with the National Ambient Air Quality Standards (NAAQS). (See Air Quality) This permit review would also cover Potential for Significant Deterioration (PSD), New Source Review (NSR), and particulate standards appropriate to the location. (See Air Quality) Some municipalities have adopted their own air pollution control programs. (See Urban Areas/Municipalities)

Special considerations may have to be given to odor control. Local and county governments are responsible for enforcement of odor control rules. Any business or person using any device, facility or process that discharges odorous matter, vapors, gases, dusts or combination that creates odors is subject to regulation. That person must provide, properly install, maintain, and operate odor control devices or procedures as specified by local authorities.

Solid and hazardous waste regulations are important considerations and improper disposal may result in unforeseen costs. Waste generators are legally liable for the proper disposal of waste. Solid waste disposal permits are not required if wastes are disposed of at licensed facilities. If the waste is classified as hazardous, detailed reporting requirements for disposal must be met. Any facility storing solid waste, such as hog fuel, wood waste, or refuse-derived fuel may require a solid waste management system license.

Discharges of pollutants into state waters are regulated by the Montana Water Quality Act and may require a Montana Groundwater Pollution Control System (MGWPCS) Permit and/or a Montana Pollutant Discharge Elimination System (MPDES) Permit. (See Waste Management and Water Quality) For information on specific wastes or facilities, contact DEQ, Solid Waste Section.

Montana has adopted forestry Best Management Practices (BMPs) to minimize non-point source water pollution from forest practices. While not required by regulation, the use of BMPs has been widely accepted by the forest products industry, family forests, tribal and other agencies.

<http://dnrc.mt.gov/forestry/Assistance/Practices/Documents/2001WaterQualityBMPGuide.pdf> the use of voluntary BMPs has proven to be an effective tool in limiting non-point source pollution from forest harvesting activities. The most recent audit in 2006 found that 96 percent of practices met or exceeded BMP standards. Montana's Forestry Best Management Practices (BMP) Notification Law (MCA 76-13-101 to 104 and 76-13-131 to 135) became part of the Protection of Forest Resources law in 1989. The Notification Law text is incorporated into the Text Slash and Debris Law in MCA 76-13-420 to 424. The amendments adopted at that time require landowners or operators to notify the Department of Natural Resources and Conservation (DNRC) prior to conducting forest

practices on private lands. The DNRC is charged with providing these landowners and operators with information on BMPs, which may be delivered through an on-site visit. Notification is served when an application for a Hazard Reduction Agreement is submitted. DNRC also is charged with monitoring the application and effectiveness of the BMPs. More information on Montana's BMPs can be found at <http://dnrc.mt.gov/forestry/Assistance/Practices/bmp.asp> or by contacting DNRC.

Construction and Land Use Permits

Densification facilities and pellet plants usually are located in industrial areas or near sources of forest and agricultural residues. Local building and planning agencies should be consulted before any construction begins to determine zoning requirements and land use and building permits that will be needed. (See Building, Mechanical, Electrical & Plumbing Permits, and Urban Areas/Municipalities) Boilers and boiler operators must be properly licensed.

Special Issues

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state or federal lands. (See Forest Clearing and Burning, and Forested Areas)

Pellet manufacturing plants that produce electricity may be required to pay the Electrical Energy Producers Tax, a quarterly tax imposed on any business engaged in the generation of electrical energy. The tax is \$.0002 per kilowatt-hour of electrical energy generated, manufactured or produced and is payable to the Montana Department of Revenue.

While there are no mandatory federal regulations or testing requirements for pellet fuel, the Pellet Fuels Institute (PFI) in Arlington, Virginia — a non-profit organization that serves the pellet industry — does set standards for its members. The voluntary standards apply to PFI members only; non-members are not required to meet these standards. The goal of the standards is to assure uniformity in a final product derived from naturally grown materials. The pellets are considered a processed, but not refined, fuel. PFI-graded fuel must meet tests for density, dimensions, fines, chlorides, and ash content. For more information, contact the PFI at: www.pelletheat.org/2/index/index.html

Federal Incentives and Assistance

Biomass Crop Assistance Program — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage and transportation of eligible material for use in a biomass conversion facility. Three types of payments are authorized under BCAP:

- Payments for up to 75 percent of the cost of establishing an eligible biomass crop for BCAP contract acreage.
- Annual payments to support production for BCAP contract acreage.

- Collection, harvest, storage and transportation (CHST) payments of up to \$45/ton for two years for collection, harvest, storage and transportation of eligible material to a biomass conversion facility from BCAP contract acreage and other sources.

More information is available at:

www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

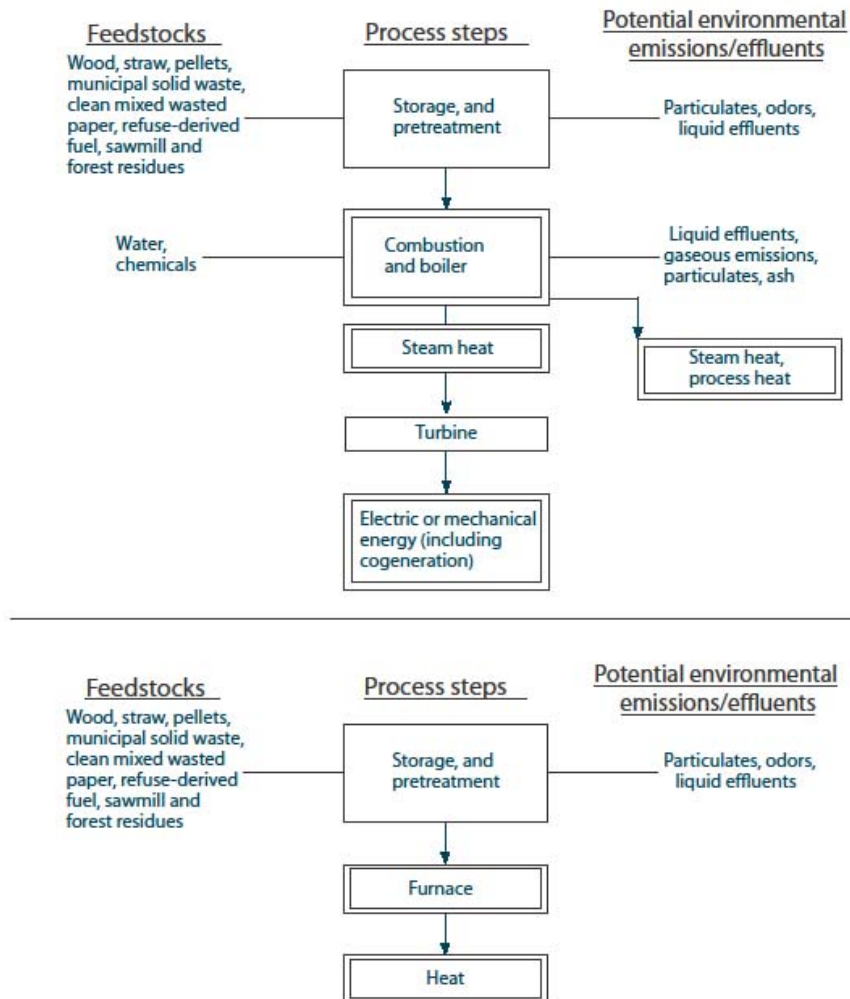
DIRECT COMBUSTION

Biomass such as wood, garbage, manure, straw and biogas can be burned without processing to produce hot gases for heat or steam, as shown in Fig. 7. This process ranges from burning wood in fireplaces to burning garbage in a fluidized bed boiler to produce heat or steam to generate electric power. Direct combustion is the simplest biomass technology and may be very economical if the biomass source is nearby.

Direct combustion is the most common technology used for bioenergy in Montana. Approximately 295,000 oven-dry tons of wood waste is used annually for energy, including process steam, drying, air conditioning and space heat. About 7 percent of Montana residences rely on wood for space heating. These fuels are primarily derived from forest residues produced each year in Montana by forest fires, insects and disease, and timber harvest activities. Expanded use of wood residues for industrial and institutional applications is possible in Montana. In-state production of mill residue has fallen from about 1.5 to 1.0 million dry tons annually between 2004 and 2008. Straw and spoiled hay produced by Montana grain fields also could be removed for fuel.

FIGURE 7

Direct Combustion



Most of the permits, licenses, and special issues pertaining to direct combustion of biomass are summarized in Table 7. Detailed information on these permits, licenses, and special issues is provided in sections 3, 4, and 5.

Table 7: Direct Combustion Permits, Licenses, and Special Issues

Construction and Land Use

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Floodplain and Floodway Permit (DNRC)
- Lakeshore Permit (Local govt.)
- Mechanical Permit (DOC or local bldg. dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local bldg. dept.)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)
- General Permit for Storm Water Discharges Associated with Construction Activity (DEQ)
- National Pollutant Discharge Elimination System (NPDES) Permit
- Odor Control (Local govt.)
- National Ambient Air Quality Standards (NAAQS)
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)
- Stream Bed and Land Preservation Permit (310 Permit, normally local conservation dist.)

Special Issues

- Business Licensing Requirements
- Electrical Energy Producers Tax
- Feed and Fertilizer Permit
- Fire Hazard Reduction Permit
- Fire Safety Inspections
- Timber Sales Permit

Environmental Considerations

- Montana Air Quality Permit/Title V Operating Permits (DEQ)
- Beneficial Water Use Permit (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MEQ) Permit (DPHHS)

Environmental Permits and Considerations

Biomass-fired furnaces and boilers must maintain compliance with MAAQS/NAAQS and air quality regulations. A permit may be required from the Department of Environmental Quality, Air Resources Management Bureau (ARMB) for fuel-burning furnaces, boilers or other facilities, depending on size, fuel and other factors. The rule concerning particulate emissions from new fuel-burning installations, shown in Fig. 13, may be applied, but Best Available Control Technologies (BACT) applies to all regulated pollutants for applicable bioenergy projects. Because BACT may be more stringent than values shown in Fig. 13, all applicable sources must utilize BACT first to be sure of meeting emission requirements. (See Air Quality)

Montana air quality permits are required for a new facility with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) Title 17, Chapter 8, and Subchapter 7. Any facility required to obtain an air quality permit, such as an alcohol plant that burns solid fuel, must be in compliance with the National Ambient Air Quality Standards (NAAQS). (See Air Quality) This permit review would also cover Potential for Significant Deterioration (PSD), New Source Review (NSR), and particulate standards appropriate to the location. (See Air Quality) Some municipalities have adopted their own air pollution control programs. (See Urban Areas/Municipalities)

Disposing of ash and fly ash that might include solid or hazardous wastes is complex, and disposal may result in unexpected costs. Waste generators are legally liable for the proper disposal of waste. Solid waste disposal permits are not required if wastes are disposed of at licensed facilities. Any facility storing solid waste, such as refuse-derived fuel or hog fuel, may require a Solid Waste Management System License. Discharges of pollutants into state waters are regulated by the Montana Water Quality Act and may require a Montana Groundwater Pollution Control System (MGWPCS) Permit and/or a Montana Pollutant Discharge Elimination System (MPDES) Permit. Wastes classified as hazardous require detailed reporting for disposal. (See Waste Management, and Water Quality) For information on specific wastes or facilities, contact DEQ, Solid Waste and Underground Tank Management Bureau, Solid Waste Section.

Special considerations may have to be given to odor control. Local and county governments are responsible for enforcement of odor control rules. Any business or person using any device, facility, or process that discharges odorous matter, vapors, gases, dusts, or combination of these that creates odors is subject to regulation. That person must provide, properly install, maintain and operate odor control devices or procedures as specified by local authorities.

Montana has adopted forestry Best Management Practices (BMPs) to minimize non-point source water pollution from forest practices. While not required by regulation, the use of BMPs has been widely accepted by the forest products industry, family forests, tribal and other agencies.

<http://dnrc.mt.gov/forestry/Assistance/Practices/Documents/2001WaterQualityBMPGuide.pdf> the use of voluntary BMPs has proven to be an effective tool in limiting non-point source pollution from forest harvesting activities. The most recent audit in 2006 found

that 96 percent of practices met or exceeded BMP standards. Montana's Forestry Best Management Practices (BMP) Notification Law (MCA 76-13-101 to 104 and 76-13-131 to 135) became part of the Protection of Forest Resources law in 1989. The Notification Law text is incorporated into the Text Slash and Debris Law in MCA 76-13-420 to 424. The amendments adopted at that time require landowners or operators to notify the Department of Natural Resources and Conservation (DNRC) prior to conducting forest practices on private lands. The DNRC is charged with providing these landowners and operators with information on BMPs which may be delivered through an on-site visit.

Notification is served when an application for a Hazard Reduction Agreement is submitted. DNRC also is charged with monitoring the application and effectiveness of the BMPs. More information on Montana's BMPs can be found at <http://dnrc.mt.gov/forestry/Assistance/Practices/bmp.asp> or by contacting DNRC.

Construction and Land Use Permits

All furnaces and boilers must have local building permits. The type and location of the project will determine specific permit and zoning requirements. Boilers and boiler operators must be licensed.

Special Issues

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state or federal lands. (See Forest Clearing and Burning, and Forested Areas)

Direct combustion facilities that want to sell or use ash and residues as soil amendments or fertilizers must obtain a Fertilizer/Soil Amendment Permit from the Montana Department of Agriculture (DOA). An example of this type of co-product is at a combustion facility in Kettle Falls, Washington that needed a soil amendment permit to sell the wood as a lime equivalent with levels of potassium.

Direct combustion installations that produce electricity may be required to pay the Electrical Energy Producers Tax, a quarterly tax imposed on any business engaged in the generation of electrical energy. The tax is \$.0002 per kilowatt-hour of electrical energy generated, manufactured or produced and is payable to the Montana Department of Revenue.

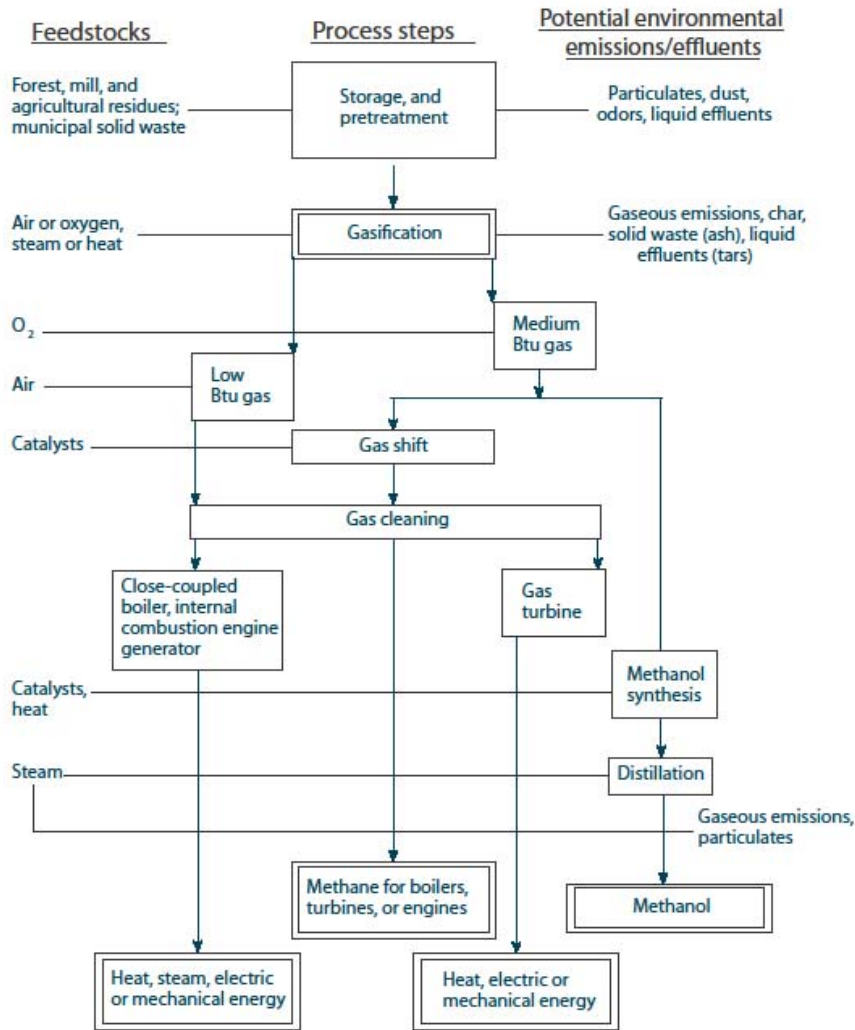
GASIFICATION

Gasification is the conversion of solid biomass to a gaseous product, as illustrated in Fig. 8. The process involves controlled combustion of the biomass under operating conditions that yield gas consisting of carbon monoxide (CO) and hydrogen (H₂). Depending on the conditions of gasification, either low BTU gas (200 BTUs per cubic foot) or medium BTU gas (600 BTUs per cubic foot) is produced. Both low and medium BTU gas can be used directly to produce electricity, mechanical energy or process heat. Direct coupled gasifiers are used at school boilers in Thompson Falls, Kalispell (Glacier High School), and at the University of Montana-Western campus in Dillon. Medium BTU gas also can be converted to either methane by the gas shift process or liquid methanol by the methanol synthesis process.

Plasma arc gasification is an emerging gasification technology in which biomass, hazardous and toxic waste, landfill waste and other sources enters a primary reactor where electric, thermal and chemical reactions are initiated and maintained by electrical arcs. The resulting medium BTU gas, consisting largely of hydrogen and carbon monoxide, is then passed through a secondary reactor where it reacts with petroleum coke and an electric arc at high temperature. This produces a gas consisting of methane, hydrogen, and carbon monoxide, which can be used to fuel engines or to generate electricity. This technology is not widely available and currently is not economically feasible for most applications in the United States.

FIGURE 8

Gasification



Most of the permits, licenses and special issues pertaining to gasification of biomass are summarized in Table 8. Detailed information on these permits, licenses, and special issues is provided in Sections 3, 4, and 5.

Table 8: Gasification Permits, Licenses, and Special Issues

Construction and Land Use

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Floodplain and Floodway Permit (DNRC)
- Lakeshore Permit (Local govt.)
- Mechanical Permit (DOC or local bldg. dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local bldg. dept.)

Special Issues

- Business Licensing Requirements
- Electrical Energy Producers Tax
- Fire Hazard Reduction Permit
- Fire Safety Inspections

Environmental Considerations

- Montana Air Quality Permit/Title V Operating Permits (DEQ)

- Beneficial Water Use Permit (DNRC)
- Forestry Best Management Practices (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPS) Permit (DEQ)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)
- General Permit for Storm Water Discharges Associated with Construction Activity (DEQ)
- National Pollutant Discharge Elimination System (NPDES) Permit
- Odor Control (Local govt.)
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)
- Stream Bed and Land Preservation Permit (310 Permit, normally local conservation dist.)

Environmental Permits and Considerations

Gasification technology involves many process steps, each of which could discharge solid waste, liquid waste and gaseous emissions. Montana air quality permits are required for a new facility or emitting unit with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) 17.8.45. The process equipment should be designed with the Best Available Control Technology (BACT) to minimize potential air pollution. Air and water discharge permits may apply. (See Air Quality)

Special considerations may have to be given to odor control. Local and county governments are responsible for enforcement of odor control rules. Any business or person using any device, facility, or process that discharges odorous matter, vapors, gases, dusts or combination of these that creates odors is subject to regulation. That person must provide, properly install, maintain and operate odor control devices or procedures as specified by local authorities.

Gasifiers can produce toxic and hazardous materials that cannot be disposed of in landfills. Materials listed as hazardous have detailed reporting requirements for hazardous waste disposal. Waste generators are legally liable for the proper disposal of waste. Solid waste disposal permits are not required if wastes are disposed of at licensed facilities. Any facility storing solid waste, such as hog fuel, may require a Solid Waste Management System License. Discharges of pollutants into state waters are regulated by the Montana Water Quality Act and may require a Montana Groundwater Pollution Control System (MGWPCS) Permit and/or a Montana Pollutant Discharge Elimination System (MPDES) Permit. Wastes classified as hazardous require detailed reporting for disposal. (See Waste Management, and Water Quality) For information on specific wastes or facilities, contact the DEQ Solid Waste and Underground Tank Management Bureau, Solid Waste Section.

Montana has adopted forestry Best Management Practices (BMPs) to minimize non-point source water pollution from forest practices. While not required by regulation, the use of BMPs has been widely accepted by the forest products industry, family forests, tribal and other agencies.

<http://dnrc.mt.gov/forestry/Assistance/Practices/Documents/2001WaterQualityBMPGuide.pdf>The use of voluntary BMPs has proven to be an effective tool in limiting non-point source pollution from forest harvesting activities. The most recent audit in 2006 found that 96 percent of practices met or exceeded BMP standards. Montana's Forestry Best Management Practices (BMP) Notification Law (MCA 76-13-101 to 104 and 76-13-131 to 135) became part of the Protection of Forest Resources law in 1989. The Notification Law text is incorporated into the Text Slash and Debris Law in MCA 76-13-420 to 424. The amendments adopted at that time require landowners or operators to notify the Department of Natural Resources and Conservation (DNRC) prior to conducting forest practices on private lands. The DNRC is charged with providing these landowners and operators with information on BMPs which may be delivered through an on-site visit. Notification is served when an application for a Hazard Reduction Agreement is submitted. DNRC also is charged with monitoring the application and effectiveness of

the BMPs. More information on Montana's BMPs can be found at <http://dnrc.mt.gov/forestry/Assistance/Practices/bmp.asp> or by contacting DNRC.

Construction and Land Use Permits

Finding an acceptable location for a gasification facility depends on how well potential environmental impacts can be mitigated. Gasifiers are required to comply with all land use requirements, as well as building, mechanical, electrical, and plumbing codes. (See Building, Mechanical, Electrical & Plumbing Permits) Boilers and boiler operators must be properly licensed.

Special Issues

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state or federal lands. (See Forest Clearing and Burning, and Forested Areas)

Gasification processes that produce electricity may be required to pay Electrical Energy Producers Tax, a quarterly tax imposed on any business engaged in the generation of electrical energy. The tax is \$.0002 per kilowatt-hour of electrical energy generated, manufactured or produced and is payable to the Montana Department of Revenue.

Montana Incentives

Property Tax Abatement For New Renewable Energy Production Facilities — Eligible gasification facilities and equipment may be assessed 50 percent of the taxable value for the construction period and the first 15 years after the facility commences operation, not to exceed 19 years. Additionally, all renewable energy research and development equipment up to \$1 million in value may qualify for a 50 percent property tax abatement, if it is placed into service after June 30, 2007. See MCA 15-24-3111 for more information.

NorthWestern Energy USB Renewable Energy Fund — NorthWestern Energy periodically provides funding to its customers for renewable energy projects through the Universal System Benefits (USB) Program. A guide to funding renewable energy projects, *Bright Ideas in Renewable Energy*, (<http://www.northwesternenergy.com/documents/E+Programs/E+RenewableEnergy.pdf>) explains the program and the request for proposal (RFP) process.

Federal Incentives and Assistance

Biomass Crop Assistance Program — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage and transportation of eligible material for use in a biomass conversion facility. The rules for BCAP are currently under revision. More information is available at: www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

LANDFILL GAS

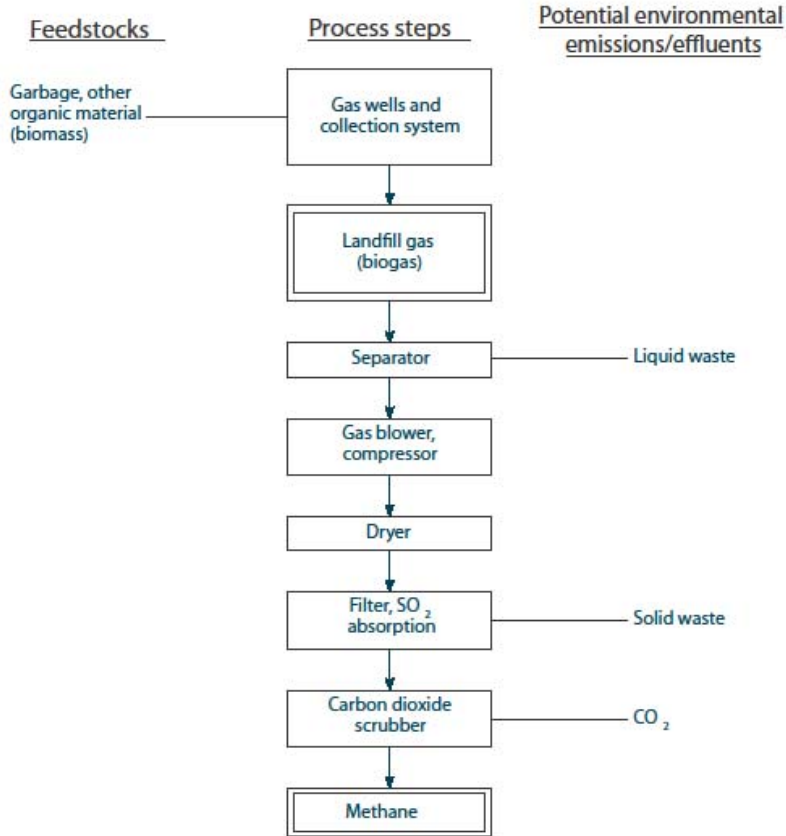
Landfill gas is Biogas generated by the decay (anaerobic digestion) of buried trash and garbage in landfills, as shown in Fig. 9. When the organic waste decomposes, it generates gas consisting of approximately 50 percent methane, the major component in natural gas. Landfill gas can be dangerous, and EPA requires collection and control systems for certain landfills.

While methane gas can be dangerous, it also can be beneficial. Methane gas recovery technologies allow the methane to be collected using specially designed wells and piping systems throughout the landfill. The collected gas is then filtered and passed into a generating facility where it powers generators that produce electricity.

The first operating landfill gas project in Montana is located at the Flathead County Landfill. The Landfill Gas-to-Energy Facility came online in June of 2009 and currently produces 800 kilowatts of electricity each hour — enough to power approximately 800 homes. The system has the capacity to generate 1.6 megawatts each hour at full capacity. A second facility is planned in Missoula, using the biogas for heat and possibly power at a local lumber plant. A third project is underway by Montana-Dakota Utilities at the Billings regional landfill. This project is expected to collect and refine the methane for marketing over the MDU network.

FIGURE 9

Landfill Gas



Most of the permits, licenses, and special issues pertaining to landfill gas derived from biomass are summarized in Table 9. Detailed information on these permits, licenses, and special issues is provided in Sections 3, 4, and 5.

Table 9: Landfill Gas Permits, Licenses, and Special Issues

Construction and Land Use

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Floodplain and Floodway Permit (DNRC)
- Lakeshore Permit (Local govt.)
- Mechanical Permit (DOC or local bldg. dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local bldg. dept.)
- National Pollutant Discharge Elimination System (NPDES) Permit
- Odor Control (Local govt.)
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)
- Stream Bed and Land Preservation Permit (310 Permit, normally local conservation dist.)

Special Issues

- Business Licensing Requirements
- Electrical Energy Producers Tax
- Fire Safety Inspections

Environmental Considerations

- Montana Air Quality Permit/Title V Operating Permits (DEQ)
- Beneficial Water Use Permit (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPS) Permit (DEQ)
- Montana Pollutant Discharge Elimination System (DEQ) Permit C
- General Permit for Storm Water Discharges Associated with Construction Activity (DEQ)

Environmental Permits and Considerations

Landfill gas technology involves the capture and processing of biogas that is already being generated. Environmental permits would be required for any solid, liquid or gaseous effluents that would leave the landfill as part of the process of gas collection and use. The Department of Environmental Quality (DEQ) regulates all landfills in Montana. Anyone who wants to capture or process landfill gas must obtain prior approval from the DEQ Solid Waste Section. Montana air quality permits may be required for a new facility with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) Title 17, Chapter 8, and Subchapter 7. Any facility required to obtain an air quality permit must be in compliance with the National Ambient Air Quality Standards (NAAQS) and Hazardous Air Pollutants (HAPs), including methane. (See Air Quality) This permit review would also cover Potential for Significant Deterioration (PSD), New Source Review (NSR), and particulate standards appropriate to the location. (See Air Quality and Waste Management)

Special considerations may have to be given to odor control. Local and county governments are responsible for enforcement of odor control rules. Any business or person using any device, facility or process that discharges odorous matter, vapors, gases, dusts or combination that creates odors is subject to regulation. That entity must provide, properly install, maintain and operate odor control devices or procedures as specified by local authorities.

The EPA requires collection and control systems in landfills that have a design capacity greater than or equal to 2.5 million megagrams and 2.5 million cubic meters, and have a non-methane organic compound emission rate of 50 megagrams per year or more. (Refer to 40 CFR Part 60, Subpart Cc)

Construction and Land Use Permits

Biogas processing and handling equipment must meet applicable building, mechanical, electrical and plumbing codes. (See Building, Mechanical, Electrical, and Plumbing Permits) Equipment must be designed and maintained to handle the corrosive, explosive and flammable gases.

Special Issues

Landfill taps to collect gas were previously considered natural gas wells and came under the jurisdiction of the laws and rules that pertain to gas wells. (MCA 82-11-101, *et seq*) A newer definition of “biogas” has been introduced into MCA 15-24-3102. The 2009 definitions removed the natural gas well requirements.

Montana Incentives

Alternative Energy Investment Tax Credit — Alternative energy investments of \$5,000 or more are eligible for up to 35 percent tax credit against individual or corporate tax on income generated by the investment. The tax credit must be taken the year the equipment is placed in service; however, any portion of the tax

credit that exceeds the amount of tax to be paid may be carried over and applied against state tax liability for the following seven years. A project of 5 megawatts or larger on an Indian Reservation may carry the credit over for 15 years, if it has an employment agreement with the tribal government.

Taxpayers may not take this credit in conjunction with any other state energy or state investment tax benefits, or with the property tax exemption for non-fossil energy property. (MCA 15-6-224) This credit is available to taxpayers purchasing an existing facility as well as to those building a new facility.

Property Tax Abatement For Production and Manufacturing Facilities — Eligible renewable energy manufacturing facilities may be assessed 50 percent of the taxable value for the construction period and the first 15 years after the facility commences operation, not to exceed 19 years. Qualifying facilities include those that produce materials, components, or systems to convert biogas into useful energy and whose annual production of renewable energy equipment makes up at least half of the facility's total production. Additionally, all renewable energy research and development equipment up to \$1 million in value may qualify for a 50 percent property tax abatement if it is placed into service after June 30, 2007. See MCA 15-24-3111 and MCA 15-6-157 for more information.

Personal Tax Credit — Commercial or industrial landfill gas facilities may be eligible for a tax credit up to 35 percent against corporate tax on income generated by the investment. The tax credit must be taken the year the equipment is placed in service; however, any portion of the tax credit that exceeds the amount of tax to be paid may be carried over and applied against state tax liability for the following seven years. A credit may be extended through the fifteenth tax year succeeding the tax year of installation for projects on a Montana Indian Reservation that meet other specified criteria. Find more information at <http://www.deq.state.mt.us/energy/Renewable/TaxIncentRenew.asp#15-32-401>.

Corporate Property Tax Reduction for New/Expanded Generating Facilities — Plants generating 1 megawatt (MW) or more by means of an alternative renewable energy source are eligible for the new or expanded industry property tax reduction on the local mill levy during the first nine years of operation, subject to approval by the local government. If approved, the facility is taxed at 50 percent of its taxable value in the first five years after the construction permit is issued. Each year thereafter, the percentage is increased by equal percentages until the full taxable value is attained in the tenth year. The tax reduction applies only to taxes levied for the local high schools and elementary schools and for the local government offering the reduction. For more information see <http://www.deq.state.mt.us/energy/Renewable/TaxIncentRenew.asp#15-24-1401>.

Generation Facility Corporate Tax Exemption — New electricity generating facilities built in Montana with a capacity less than 1 MW that use an alternative renewable energy source are exempt from property taxes for five years after operation begins. The taxable value of property varies depending on the property ownership and class. State property tax exemption forms are available at the Department of Revenue's county office.

For more information, see:

<http://www.deq.state.mt.us/energy/Renewable/TaxIncentRenew.asp#15-6-225>

Renewable Energy Systems Exemption — Montana's property tax exemption for recognized non-fossil forms of energy generation, including decomposition of organic wastes, may be claimed for 10 years after installation of the property. The exemption is allowed for single-family residential dwellings up to \$20,000 in value and for multifamily residential dwellings or a nonresidential structure up to \$100,000 in value. For more information, see [http://deq.mt.gov/Energy/renewable/taxincentrenew.asp#15-6-201\(4\)](http://deq.mt.gov/Energy/renewable/taxincentrenew.asp#15-6-201(4))

Alternative Energy Revolving Loan Program (AERLP) — This program provides loans to individuals, small businesses, local government agencies, units of the university system, and nonprofit organizations to install alternative energy systems that generate energy for their own use. DEQ provides technical review and approval of systems proposed for the loan program. See <http://www.deq.state.mt.us/energy/Renewable/altenergyloan.mcp>

NorthWestern Energy USB Renewable Energy Fund — NorthWestern Energy periodically provides funding to its customers for renewable energy projects through the Universal System Benefits (USB) Program. A guide to funding renewable energy projects, *Bright Ideas in Renewable Energy*, (<http://www.northwesternenergy.com/documents/E+Programs/E+RenewableEnergy.pdf>) explains the program and the request for proposal (RFP) process.

Federal Incentives and Assistance

Modified Accelerated Cost-Recovery System (MACRS) — Businesses with equipment and structures used to receive, handle, collect and process biomass in a refuse-derived fuel system may recover investments in certain property through depreciation deductions, ranging from 3 to 50 years over which the property may be depreciated. For more information on the federal MACRS, see IRS Publication 946, IRS Form 4562: Depreciation and Amortization, and Instructions for Form 4562 at <http://www.irs.gov/>

Renewable Electricity Production Tax Credit (PTC) — Commercial and industrial landfill gas facilities with a minimum capacity of 150 kW may be eligible for the PTC, a per-kilowatt-hour tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year. The credit amounts to 1.1 cents per kilowatt-hour (kWh) for a landfill gas facility that is in place by December 31, 2013. The PTC generally applies to the first 10 years of a facility's operation. For more information, visit <http://www.irs.gov/pub/irs-pdf/f8835.pdf>

Under the American Recovery and Reinvestment Act of 2009, taxpayers eligible for the PTC may receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. Grant applications must be submitted by October 1, 2011. More information is available in Notice 2009-52 (<http://www.irs.gov/pub/irs-drop/n-09-52.pdf>), issued by the Treasury Department in June 2009, and <http://www.treas.gov/recovery/1603.shtml>

Renewable Energy Production Incentive (REPI) — Landfill-gas-to-energy-facilities may be qualified for annual incentive payments of 1.5 cents per kWh in 1993 dollars (indexed for inflation). These incentive payments are available for the first 10-year period of the facility's operation but are subject to the availability of annual appropriations in each federal fiscal year of operation. REPI was designed to complement the federal PTC, which is available only to businesses that pay federal corporate taxes. For more information see <http://apps1.eere.energy.gov/rep/>

Qualified Energy Conservation Bonds (QECS) — QECSs may be used by state, local and tribal governments to finance certain types of energy projects. These bonds are issued with a 0 percent interest rate. The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest. Credits exceeding a bondholder's tax liability may be carried forward to the succeeding tax year, but cannot be refunded. Energy conservation bonds differ from traditional tax-exempt bonds in that the tax credits issued through the program are treated as taxable income for the bondholder. For more information see <http://www.irs.gov/pub/irs-drop/n-09-29.pdf>

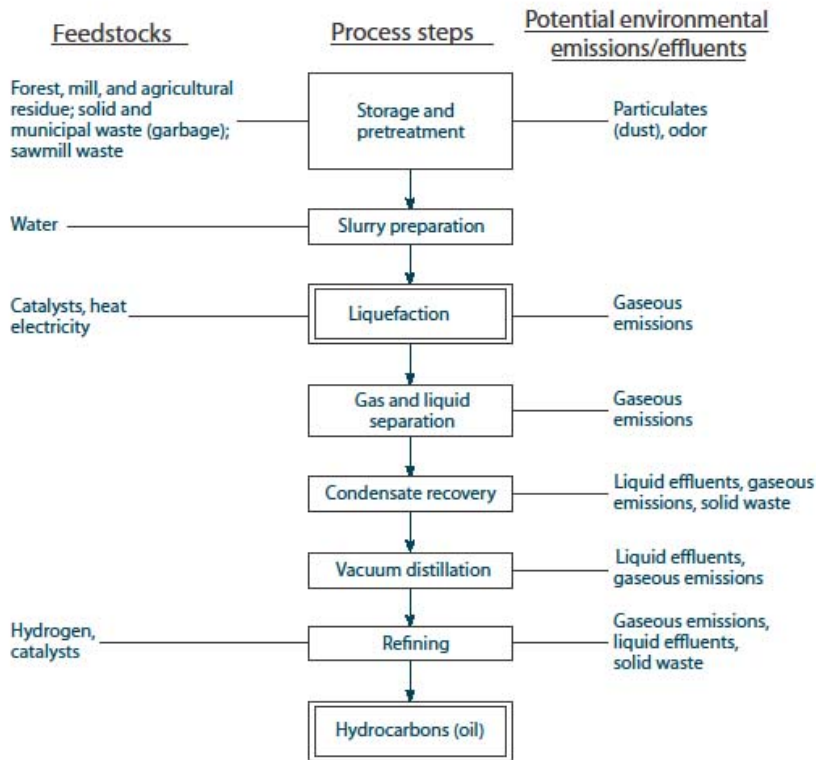
Biomass Crop Assistance Program (BCAP) — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage and transportation of eligible material for use in a biomass conversion facility. The rules are currently under BCAP revision. More information is available at: www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

LIQUEFACTION

Liquefaction is a process that adds hydrogen to organic compounds (usually solids) to obtain oil with a high hydrogen-to-carbon ratio, as shown in Fig. 10. The biomass feedstocks that can be converted with this technology are residues from forests, mills and agriculture and municipal solid waste. Most liquefaction processes take place under high pressure and temperature. Several schemes are being developed for different feedstocks, reactor designs, catalysts and operating conditions. There currently are no biomass liquefaction projects in Montana.

FIGURE 10

Liquefaction *



* Yet to be proven commercially

Most of the permits, licenses, and special issues pertaining to liquefaction of biomass are summarized in Table 10. Detailed information on these permits, licenses, and special issues is provided in Sections 3, 4, and 5.

Table 10: Liquefaction Permits, Licenses, and Special Issues

Construction and Land Use

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Lakeshore Permit (Local govt.)
- Mechanical Permit (DOC or local bldg. dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local bldg. dept.)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)
- General Permit for Storm Water Discharges Associated with Construction Activity (DEQ)
- National Pollutant Discharge Elimination System (NPDES) Permit
- Odor Control (Local govt.)
- National Ambient Air Quality Standards (NAAQS)
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)
- Stream Bed and Land Preservation Permit (310 Permit, normally local conservation dist.)

Special Issues

- Business Licensing Requirements
- Electrical Energy Producer's Tax
- Fire Hazard Reduction Permit
- Fire Safety Inspections

Environmental Considerations

- Montana Air Quality Permit/Title V Operating Permits (DEQ)
- Beneficial Water Use Permit (DNRC)
- Forestry Best Management Practices (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPS) Permit (DEQ)

Environmental Permits and Considerations

Environmental emissions from a biomass liquefaction facility depend on the feedstock and specific liquefaction process used. Air and water discharge permits may apply. Montana air quality permits are required for a new facility or emitting unit with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) Title 17, Chapter 8, and Subchapter 7. Any facility required to obtain an air quality permit must be in compliance with the National Ambient Air Quality Standards (NAAQS). (See Air Quality) This permit review would also cover Potential for Significant Deterioration (PSD), New Source Review (NSR), and particulate standards appropriate to the location. (See Air Quality) Special considerations may have to be given to odor control.

Solid and hazardous waste regulations are important considerations, and improper disposal may result in unforeseen costs. Waste generators are legally liable for the proper disposal of waste. Solid waste disposal permits are not required if wastes are disposed of at licensed facilities. If the waste is classified as hazardous, detailed reporting requirements for disposal must be met. Any facility storing solid waste, such as hog fuel, wood waste or refuse-derived fuel may require a solid waste management system license.

Discharges of pollutants into state waters are regulated by the Montana Water Quality Act and may require a Montana Groundwater Pollution Control System (MGWPCS) Permit and/or a Montana Pollutant Discharge Elimination System (MPDES) Permit. Wastes classified as hazardous require detailed reporting for disposal. (See Waste Management and Water Quality) For information on specific wastes or facilities, contact the DEQ Solid Waste Section.

Construction and Land Use Permits

New technologies, especially ones with potential environmental impacts, will be carefully scrutinized by state and local officials and the public. Allow plenty of time in the planning process for public hearings and comment periods, and for working closely with local planning and zoning departments to get land use permits, as well as applicable building, electrical, mechanical, and plumbing permits. Boilers and boiler operators must be licensed.

Special Issues

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state or federal lands. (See Forest Clearing and Burning and Forested Areas)

Montana has adopted forestry Best Management Practices (BMPs) to minimize non-point source water pollution from forest practices. While not required by regulation, the use of BMPs has been widely accepted by the forest products industry, family forests, tribal and other agencies.

<http://dnrc.mt.gov/forestry/Assistance/Practices/Documents/2001WaterQualityBMPGuide.pdf> . The use of voluntary BMPs has proven to be an effective tool in limiting non-

point source pollution from forest harvesting activities. The most recent audit in 2006 found that 96 percent of practices met or exceeded BMP standards. Montana's Forestry Best Management Practices (BMP) Notification Law (MCA 76-13-101 to 104 and 76-13-131 to 135) became part of the Protection of Forest Resources law in 1989. The Notification Law text is incorporated into the Text Slash and Debris Law in MCA 76-13-420 to 424. The amendments adopted at that time require landowners or operators to notify the Department of Natural Resources and Conservation (DNRC) prior to conducting forest practices on private lands. The DNRC is charged with providing these landowners and operators with information on BMPs, which may be delivered through an on-site visit. Notification is served when an application for a Hazard Reduction Agreement is submitted. DNRC also is charged with monitoring the application and effectiveness of the BMPs. More information on Montana's BMPs can be found at <http://dnrc.mt.gov/forestry/Assistance/Practices/bmp.asp> or by contacting DNRC.

Federal Incentives and Assistance

Biomass Crop Assistance Program (BCAP) — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage and transportation of eligible material for use in a biomass conversion facility. The rules under BCAP are currently under revision. More information is available at:

www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

Oilseed Extraction and Biodiesel

Biodiesel is a versatile, clean-burning fuel made from renewable, biodegradable sources. By current definition, biodiesel is the mono-alkyl esters of fatty acids meeting ASTM D6751 specifications. Put another way, a plant oil or animal fat is reacted with an alcohol, like methanol, in the presence of a catalyst to produce glycerin and the ester, which is biodiesel. Biodiesel can be blended with petroleum diesel in any proportion and used in diesel engines without major modification. Biodiesel can be made from almost any vegetable oil or animal fat through a process that is neither difficult nor prohibitively expensive. Typically, biodiesel is distributed as a 20 percent blend with Number 1 or 2 diesel fuels.

Biodiesel also can be blended in concentrations up to 5 percent with conventional high- or low-sulfur home heating oil to create Bioheat®, which can be used in home heating oil systems safely with no modifications to the fuel tanks, pumps or burners.

When burned, biodiesel releases up to 78 percent less carbon dioxide (CO₂) than conventional diesel fuel because the crops used to produce biodiesel absorb large amounts of CO₂ as they grow. Biodiesel reduces by 68 percent the small particulates endemic to diesel exhaust. It also reduces all major greenhouse gases (including carbon monoxide, oxides of nitrogen, and methane) when used in a conventional diesel engine.

Oilseeds, algae and animal fats can be processed to make biodiesel and other biofuels as shown in Fig. 11. Biodiesel also can be produced using recycled cooking oil. Biodiesel may be produced in small quantities for individual use or in much larger quantities for commercial purposes. Biodiesel production is increasing nationwide, in part due to the federal energy bill, which calls for 1 billion gallons of biomass-derived diesel to be produced by 2012. Several facilities are producing biodiesel in Montana (see Appendix A). Newer non-food feedstocks and processes are being investigated for “biomass-derived diesel,” which is not yet fully defined by EPA in the Renewable Fuel Standard. New rules are currently under development. For more information, go to www.epa.gov.

Feedstocks may include oilseeds, algae, used vegetable oil, and animal fats. Each feedstock type requires different processing steps. For example, oilseeds need to be crushed and flaked before extracting the oil from the seed. That process can remove up to 80 percent of the oil in the seed, leaving a seed meal with oil. Chemical extraction, using a solvent like hexane, can remove up to 98.5 percent of the oil. The solvent is then evaporated from the oil and re-cycled. This process adds cost, but allows the meal a longer storage life. Animal fats need to be cooked and rendered with free fatty acids reduced before processing into biodiesel.

Depending on the feedstock, there may be various gaseous emissions and wastes, as well as useful by-products. For example, oilseed processing produces seed meal along with oil. Glycerin is a by-product of biodiesel processing. Small producers in rural areas may have a challenge finding markets for these products.

Environmental impacts can be caused by particulate emissions from storage and pre-treatment of agricultural crops, solid wastes and gaseous emissions from processing feedstocks, and effluents from biodiesel processing.

Most of the permits, licenses, and special issues pertaining to oilseed extraction, algae processing, or biodiesel are summarized in Table 11. Detailed information on these permits, licenses, and special issues is provided in Sections 3, 4, and 5.

Table 11: Oilseeds and Biodiesel Production Permits, Licenses, and Special Issues

Biodiesel/Oilseeds

- EPA Biodiesel Fuel Producer Registration and Fuel Certification
- Fuel Distribution Tax (IRS)
- IRS Fuel Blender Registration
- Special Fuel Distributors License
- Testing Exemption for Non-Certified Alternative Fuels
- Commercial Device License, Meter and Weighing Devices
- Fuel Certification for Ultra-Low Sulfur Diesel (EPA)
- Waiver to Use Non-Certified Alternative Fuels

Construction and Land Use

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Floodplain and Floodway Permit (DNRC)
- Lakeshore Permit (Local govt.)
- Mechanical Permit (DOC or local bldg. dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local bldg. dept.)

Special Issues

- One-Stop Licensing
- Business Licensing Requirements
- Commodity Dealers License
- Commodity Warehouse License
- Electrical Energy Producers Tax

- Feed Dealers Permit
- Feed and Fertilizer Permit
- Fire Safety Inspections
- Food Manufacturing License
- Highways/Transportation Regulations
- Montana Petroleum Storage Cleanup Fee
- Renewable Identification Number (RIN) Registration and Reporting
- Underground Storage Tank Permit

Environmental Considerations

- Above-Ground Storage Tank Program (AST) Spill Prevention, Control and Countermeasures Plan (SPCC)
- Above-Ground Storage Tank Installation (DEQ)
- Montana Air Quality Permit/Title V Operating Permit (DEQ)
- Beneficial Water Use Permit (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPS) Permit (DEQ)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)
- General Permit for Storm Water Discharges Associated with Construction Activity (DEQ)
- National Pollutant Discharge Elimination System (NPDES) Permit
- Odor Control (Local govt.)
- Solid Waste Management System License (DEQ)

- Stream Protection Act Permit (DFWP)
- National Ambient Air Quality Standards (NAAQS)
- Small Biodiesel Production Facility Permit (DEQ)

Other Considerations:

- Class D Certificates of Public Convenience and Necessity
- Engine and Vehicle Manufacturer's Warranties
- Fuel Producer Liability Insurance
- Inspection and Label Review (DOA), Fertilizer / Feed and Fertilizer Licenses, Labels, and Inspection, 406 444-0512)

Environmental Permits and Considerations

Emissions from an oilseed extraction or biodiesel production process should be minimal. Solid co-products normally would be recovered and marketed as animal feed, soil amendments, or food supplements. Wastewater will have a high biological oxygen demand (BOD). Discharges of pollutants into state waters are regulated by the Montana Water Quality Act and may require a Montana Groundwater Pollution Control System (MGWPCS) Permit and/or a Montana Pollutant Discharge Elimination System (MPDES) Permit. (See Waste Management and Water Quality) For information on specific wastes or facilities, contact the DEQ Solid Waste Management Section.

Montana air quality permits are required for a new facility with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) Title 17, Chapter 8, and Subchapter 7. Any facility required to obtain an air quality permit, such as a biodiesel production facility, must be in compliance with the National Ambient Air Quality Standards (NAAQS) and Hazardous Air Pollutants (HAPs) regulations. (See Air Quality) This permit review would also cover Potential for Significant Deterioration (PSD), New Source Review (NSR), particulate standards appropriate to the location, and hazardous air pollutant requirements. (See Air Quality)

Small biodiesel production will need to account for methanol in biodiesel production, if used, as it is listed as a potential hazardous air pollutant. For example, the methanol used as the alcohol must be contained, used, captured or recycled so that no more than 10-tons a year are emitted. Earl Fisher Biofuels in Chester currently uses the glycerin co-product to help fuel an EPA-approved waste-oil boiler. The company captures its methanol for reuse using a flash process on both biodiesel and glycerol. Large biodiesel producers that will recycle methanol may also need to account for hexane, if it is used to extract commercially produced vegetable oil. Although the hexane content may be small (parts per million), the amount may need to be considered in some larger facilities.

Solid and hazardous waste regulations are important considerations, and improper disposal may result in unforeseen costs. Waste generators are legally liable for the proper disposal of waste. Solid waste disposal permits are not required if wastes are disposed of at licensed facilities. If the waste is classified as hazardous, detailed reporting requirements for disposal must be met. Any facility storing solid waste may require a solid waste management system license. Benzene or mixtures of benzene that might be used as an extraction solvent or other waste may be subject to hazardous waste management regulations. For more information, contact the DEQ Solid Waste Section.

Special considerations may have to be given to odor control. Local and county governments are responsible for enforcement of odor control rules. Any business or person using any device, facility, or process that discharges odorous matter, vapors, gases, dusts, or combination of these that creates odors is subject to regulation. That person must provide, properly install, maintain and operate odor control devices or procedures as specified by local authorities.

Above-ground storage tanks must be properly installed in accordance with manufacturer's specifications/recommendations; the appropriate recommended practices adopted in ARM 17.57.104; and various Uniform Fire Code requirements. While no permits are required, owners of new tank installations should send to their regional Fire Marshal's office: a copy of the site plan, the planned number of tanks, the number of gallons each tank holds, and the type of valve (fire valves are required for all flammable liquids). The regional Fire Marshal's office will review the plan and subsequently determine whether the planned installation meets necessary requirements. Regional offices are listed in Appendix B under Montana Department of Justice.

The U.S. Environmental Protection Agency (EPA) administers and approves Spill Prevention, Control and Countermeasure (SPCC) Plans for bulk petroleum storage facilities. Federal regulations require owners or operators of non-transportation-related bulk petroleum storage facilities having an aggregate aboveground storage capacity greater than 1,320 gallons or a buried storage capacity greater than 42,000 gallons to prepare and maintain a site-specific SPCC Plan for their facility. An SPCC Plan is a detailed, facility-specific, written description of how a facility's operations comply with the requirements of the Oil Pollution Prevention Regulation 40 CFR 112. These requirements include measures such as secondary containment, facility drainage, containment dikes and barriers, sump and collection systems, retention ponds, curbing, tank corrosion protection systems, and liquid level devices. More information is available at <http://www.deq.mt.gov/LUST/techguiddocs/techguid17.pdf> or from EPA.

Under the EPA's Renewable Fuels Standard (RFS) program, every gallon of renewable fuel produced or imported into the United States must be assigned Renewable Identification Numbers (RINs). RINs are intended to track the amount of renewable fuels actually blended into gasoline or otherwise used as a motor vehicle fuel. Each year, refiners, blenders and importers must acquire sufficient RINs to demonstrate compliance with their volume obligation. For more information, see <http://www.epa.gov/otaq/renewablefuels/420f07041a.pdf>.

Small producers of alternative fuels not yet certified for use by EPA under the Clean Air Act, including straight vegetable oil and used cooking oil, as well as any vehicle modification for use of any of these fuels, must apply for a Testing Exemption from EPA before beginning the modification.

Construction and Land Use Permits

Oilseed extraction facilities likely will be located in rural or small urban areas near where the seeds are grown. Industrial development zones are not likely in such areas, so developers will need to work closely with local planning departments or county commissioners to get permits that allow access to required utilities and water. The plant also will require building, electrical, mechanical and plumbing permits. (See Building, Mechanical, Electrical, and Plumbing permits)

Local authorities often administer land use regulations and restrictions that may affect location of a bioenergy project. Choosing a plant site may be limited by zoning

regulations, floodplain or wetland restrictions, or lakeshore preservation requirements. Local governments also establish and enforce local air quality programs that could impact a biodiesel or oilseed extraction facility. (See Urban Areas/Municipalities)

Special Issues

Biodiesel and used vegetable oil is considered a specialty fuel in Montana. Producers or users are required to be registered with the Montana Department of Transportation (MDT) and pay the road tax on all fuel used in vehicles. The fuel tax can be refunded if used in off-road applications, including generators. Contact the MDT Fuel Tax Management and Analysis Bureau (406 444 7276) for more information.

Small producers of alternative fuels not yet certified for use by EPA under the Clean Air Act, including straight vegetable oil and used cooking oil, as well as any vehicle modification for use of any of these fuels, must apply for a Testing Exemption from EPA before beginning the modification.

Montana law requires a license — a Small Biodiesel Producer License — for biodiesel producers using used fry oil in their production, because it is considered resource recovery/recycling. (DEQ Solid Waste Section) In addition, the Montana Public Service Commission (PSC) issues Class D Certificates of Public Convenience and Necessity for motor carriers to transport solid waste, including used cooking oil, for disposal and landfill.

Under the EPA's Renewable Fuels Standard (RFS) program, every gallon of renewable fuel produced or imported into the United States must be assigned Renewable Identification Numbers (RINs). RINs are intended to track the amount of renewable fuels actually blended into gasoline or otherwise used as a motor vehicle fuel. Each year, refiners, blenders and importers must acquire sufficient RINs to demonstrate compliance with their volume obligation. For more information, see <http://www.epa.gov/otaq/renewablefuels/420f07041a.pdf>.

The Montana Department of Transportation (MDT) regulates various aspects and transportation and activities adjacent to highways. Permits are required for: special fuels; restricted routes or loads; companies that operate commercial motor vehicles in interstate or international commerce; highway rights-of-way, encroachments, and approaches; utility mains; outdoor advertising visible from highways; and oversized vehicles and loads. MDT's Motor Carrier Services (MCS) division is responsible for the State of Montana's oversize/overweight permit program, as well as issuing special fuel use licenses, motor carrier permits and assessing gross vehicle weight fees. In addition, certain federal requirements, such as USDOT number, may apply. (See Highways/Transportation)

Biodiesel production/oilseeds crushing facilities may be liable to pay the Electrical Energy Producers Tax, a quarterly tax imposed on any business engaged in the generation of electrical energy. The tax is \$.0002 per kilowatt-hour of electrical energy generated, manufactured, or produced and is payable to the Montana Department of Revenue.

Biodiesel producers may need to contact engine manufacturers regarding how biodiesel would affect the engine's warranty. In addition, producers may be subject to liability insurance or bonding requirements.

Montana Incentives

Property Tax Abatement for Production and Manufacturing Facilities — property tax abatement may be available for new renewable energy production facilities and renewable energy research and development equipment. Eligible facilities and equipment are assessed at 50 percent of the taxable value. Qualifying renewable energy manufacturing facilities are those: (1) that produce materials, components or systems to convert solar, wind, geothermal, biomass, biogas or waste heat resources into useful energy; and (2) whose annual production of renewable energy equipment makes up at least half of the facility's total production. For the purposes of this policy, "biomass" means any renewable organic matter, including dedicated energy crops and trees, agricultural food and feed crops, agricultural crop wastes and residues, wood wastes and residues, aquatic plants, animal wastes, municipal wastes, and other organic waste materials. (Refer to MCA 15-24-3111.)

Montana Income Tax Credit for Oilseed Crush Facility — Fifteen percent of the cost of depreciable property used to crush oilseed crops primarily for purposes of biodiesel or bio-lubricant production, up to a total of \$500,000, may be claimed as a credit against Montana income tax. Projects must begin operating before January 1, 2015. The credit may be carried forward seven years and is subject to recapture if the facility ceases operation within five years of claiming the credit. (Refer to MCA 15-32-701)

Montana Income Tax Credit for Biodiesel Production — a credit against Montana income tax is available for costs of investments in depreciable property for constructing or equipping a facility in Montana to produce biodiesel or bio-lubricants. Fifteen percent of the cost of the depreciable property may be claimed as a credit, for projects that begin operating before January 1, 2015. The credit may be carried forward seven years and is subject to recapture if the facility ceases operation within five years of claiming the credit. (Refer to MCA 15-32-70.)

Montana Income Tax Credit for Biodiesel Blending and Storage — a credit against Montana income tax is available for costs of investments in depreciable property for the storage and blending of biodiesel from Montana-produced ingredients with petroleum diesel. Fifteen percent of the cost of the property, up to a total of \$52,500 for distributors and \$7,500 for the owner or operator of a retail outlet, may be claimed as a credit. The credit may be claimed any year that blending biodiesel occurs or in the two tax years prior to when blending occurs. The credit may be carried forward seven years and is subject to recapture if the facility ceases operation within five years of claiming the credit. (Refer to MCA 15-32-703)

Biodiesel Blending and Storage Tank Credit — Special fuel distributors may be eligible to claim a tax credit equal to 15 percent of the cost of installing depreciable storage and blending equipment that is used to blend biodiesel with petroleum diesel up to a maximum credit of \$52,500. In addition, owners of a motor fuel outlet that has installed

depreciable storage and blending equipment that is used to blend biodiesel with petroleum diesel may be entitled to a tax credit equal to 15 percent of the cost of installing such equipment up to \$7,500. (Refer to MCA 15-32-703)

Biodiesel Fuel Tax Refund — a refund equal to 2 cents per gallon on the fuel tax on biodiesel made entirely from ingredients produced in Montana is available to distributors. Owners or operators of a retail motor fuel outlets may claim a refund equal to 1 cent per gallon. (Refer to MCA 15-70-369)

Biodiesel Production Tax Incentive — Biodiesel producers may claim a 10 cent per gallon incentive for increases in production during the first three years of production. The tax incentive may be claimed for: 1) the first year's total production; 2) the production in the second year that exceeds the production in the first year; and 3) the production in the third year that exceeds production in the second year. The incentive ends July 1, 2010. (Refer to MCA 15-70-601.)

NorthWestern Energy USB Renewable Energy Fund — NorthWestern Energy periodically provides funding to its customers for renewable energy projects through the Universal System Benefits (USB) Program. A guide to funding renewable energy projects, *Bright Ideas in Renewable Energy*, (<http://www.northwesternenergy.com/documents/E+Programs/E+RenewableEnergy.pdf>) explains the program and the request for proposal (RFP) process.

Federal Incentives and Assistance

Commodity Credit Corporation — The Commodity Credit Corporation (CCC) is a government-owned and operated entity that was created to stabilize, support and protect farm income and prices. The CCC, managed by the U.S. Department of Agriculture, also helps maintain balanced and adequate supplies of agricultural commodities and aids in their orderly distribution. The CCC Charter Act, as amended, aids producers through loans, purchases, payments and other operations, and makes available materials and facilities required in the production and marketing of agricultural commodities. The CCC Charter Act also authorizes the sale of agricultural commodities to other government agencies and to foreign governments and the donation of food to domestic, foreign or international relief agencies. The CCC also assists in the development of new domestic and foreign markets and marketing facilities for agricultural commodities. For more information on available assistance through CCC, visit <http://www.fsa.usda.gov/FSA/webapp?area=about&subject=landing&topic=sao-cc-ac>

Biomass Crop Assistance Program — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage and transportation of eligible material for use in a biomass conversion facility. The rules under BCAP are currently under revision. More information is available at: www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

Innovative Technology Loan Guarantee Program — The Department of Energy may issue loan guarantees for projects that employ innovative energy efficiency, renewable energy, and advanced transmission and distribution technologies. Proposed projects must fit within the criteria for “New or Significantly Improved Technologies,” as defined in 10 CFR 609. Full repayment is required over a period not to exceed the lesser of 30 years or 90 percent of the projected useful life of the physical asset to be financed. The program focuses on projects with total project costs over \$25 million. For more information, see <http://www.lgprogram.energy.gov>.

USDA - Rural Energy for America Program (REAP) Grants — Grants or loans may be available for agricultural producers and rural small businesses for renewable energy systems and renewable energy development assistance. Qualified technologies include renewable fuels. For more information, see <http://www.rurdev.usda.gov/rbs/busp/bprogs.htm>.

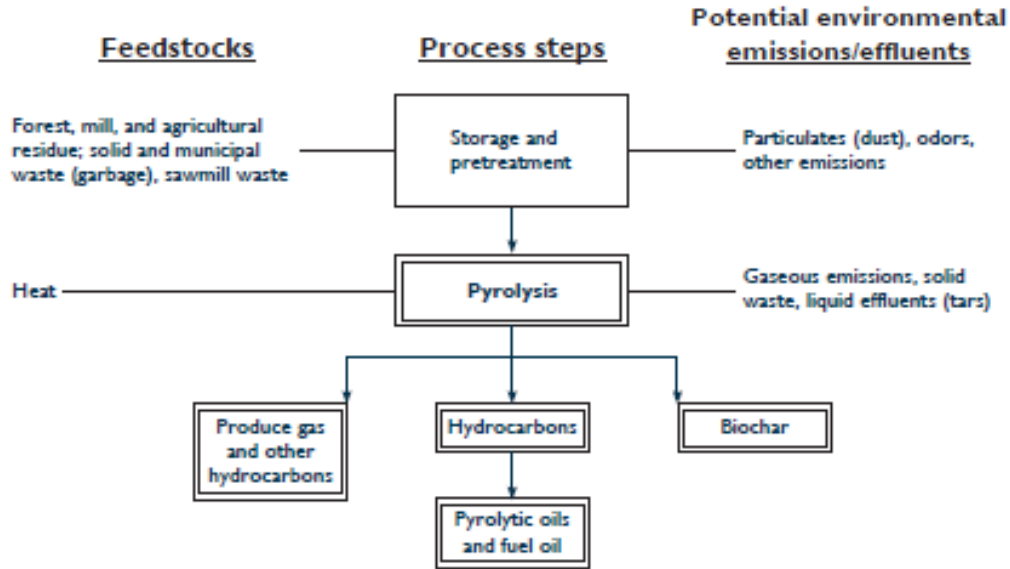
Alternative Fuel Vehicle Refueling Property Credit — qualified alternative fuel vehicle refueling properties are eligible for a federal tax credit. The credit applies to any property (other than a building or its structural components) used to store or dispense alternative fuel into the fuel tank of a motor vehicle propelled by the fuel, but only if the storage or dispensing is at the point where the fuel is delivered into the tank. For personal property, the credit is generally the lesser of 50 percent of the property’s cost, or \$50,000. The credit is claimed on IRS Form 8911. More information is available at <http://www.irs.gov/publications/p17/ch37.html>.

PYROLYSIS

Pyrolysis is the thermal degradation of biomass by heat in the absence of oxygen, as shown in Fig. 12. Biomass feedstocks, such as wood or garbage, are heated to a temperature between 800 and 1,900 degrees Fahrenheit (F), but no oxygen is introduced to support combustion. Pyrolysis results in three products: a BTU gas with methane concentration, fuel oil and charcoal or biochar solid residual. Additional processes can produce activated carbon or carbon black. The amount and quality of each product depend on the biomass used and process operating conditions. Pyrolysis units operate commercially in several applications, including production of charcoal and “Liquid Smoke” used in barbeques and food preparation.

FIGURE 12

Pyrolysis



Most of the permits, licenses, and special issues pertaining to Pyrolysis of biomass are summarized in Table 12. Detailed information on these permits, licenses, and special issues is provided in sections 3, 4, and 5.

Table 12: Pyrolysis Permits, Licenses, and Special Issues

Construction and Land Use

- Boiler Operating Certificate (DLI)
- Boiler Operators License (DLI)
- Building Permit (DOC or local building dept.)
- Electrical Permit (DOC or local building dept.)
- Floodplain Development Permit (DNRC)
- Floodplain and Floodway Permit (DNRC)
- Lakeshore Permit (Local govt.)
- Mechanical Permit (DOC or local bldg. dept.)
- Occupational Safety and Health Standards (OSHA)
- Plumbing Permit (DOC or local bldg. dept.)
- General Permit for Storm Water Discharges Associated with Construction Activity (DEQ)
- National Pollutant Discharge Elimination System (NPDES) Permit
- Odor Control (Local govt.)
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)
- Stream Bed and Land Preservation Permit (310 Permit, normally local conservation dist.)

Special Issues

- Business Licensing Requirements
- Electrical Energy Producers Tax
- Fire Hazard Reduction Permit
- Fire Safety Inspections

Environmental Considerations

- Montana Air Quality Permit/Title V Operating Permits (DEQ)
- Beneficial Water Use Permit (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPS) Permit (DEQ)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)

Environmental Permits and Considerations

The amount and type of environmental emissions depends on many factors, including the size, feedstock, and design and operating conditions of the pyrolysis reactor. Air and water discharge permits may be required from the Department of Environmental Quality (DEQ). Montana air quality permits are required for a new facility with the potential to emit airborne pollutants pursuant to Administrative Rules of Montana (ARM) Title 17, Chapter 8, and Subchapter 7. Any facility required to obtain an air quality permit, such as a biodiesel production facility, must be in compliance with the National Ambient Air Quality Standards (NAAQS) and Hazardous Air Pollutants (HAPs) regulations. (See Air Quality) This permit review would also cover Potential for Significant Deterioration (PSD), New Source Review (NSR), particulate standards appropriate to the location and hazardous air pollutant requirements. (See Air Quality) Special considerations may have to be given to odor control through local governments.

Solid and hazardous waste regulations are important considerations and improper disposal may result in unforeseen costs. Waste generators are legally liable for the proper disposal of waste. Solid waste disposal permits are not required if wastes are disposed of at licensed facilities. If the waste is classified as hazardous, detailed reporting requirements for disposal must be met. Any facility storing solid waste, such as hog fuel, wood waste or refuse-derived fuel may require a solid waste management system license.

Discharges of pollutants into state waters are regulated by the Montana Water Quality Act and may require a Montana Groundwater Pollution Control System (MGWPCS) Permit and/or a Montana Pollutant Discharge Elimination System (MPDES) Permit. Wastes classified as hazardous require detailed reporting for disposal. (See Waste Management and Water Quality) For information on specific wastes or facilities, contact the DEQ Solid Waste and Underground Tank Management Bureau, Solid Waste Management Section.

Construction and Land Use Permits

Local building and planning departments should be consulted before any construction begins to determine zoning requirements and land use and building permits that will be required. (See Building, Mechanical, Electrical & Plumbing Permits and Urban Areas/Municipalities) Boilers and boiler operators must be properly licensed.

Special Issues

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state or federal lands. (See Forest Clearing and Burning and Forested Areas)

Montana has adopted forestry Best Management Practices (BMPs) to minimize non-point source water pollution from forest practices. While not required by regulation, the use of BMPs has been widely accepted by the forest products industry, family forests, tribal and other agencies. <http://dnrc.mt.gov/forestry/Assistance/Practices/Documents/2001WaterQualityBMPGuide.pdf> . The use of voluntary BMPs has proven to be an effective tool in limiting non-point source pollution from forest harvesting activities. The most recent audit in 2006 found that 96 percent of practices met or exceeded BMP standards. Montana's Forestry Best Management Practices (BMP) Notification Law (MCA 76-13-101 to 104 and 76-13-131 to 135) became part of the Protection of Forest Resources law in 1989. The Notification Law text is incorporated into the Text Slash and Debris Law in MCA 76-13-420 to 424. The amendments adopted at that time

require landowners or operators to notify the Department of Natural Resources and Conservation (DNRC) prior to conducting forest practices on private lands. The DNRC is charged with providing these landowners and operators with information on BMPs, which may be delivered through an on-site visit. Notification is served when an application for a Hazard Reduction Agreement is submitted. DNRC also is charged with monitoring the application and effectiveness of the BMPs. More information on Montana's BMPs can be found at <http://dnrc.mt.gov/forestry/Assistance/Practices/bmp.asp> or by contacting DNRC.

Federal Incentives and Assistance

Biomass Crop Assistance Program — Authorized under Section 9011 of the 2008 Farm Bill, the Biomass Crop Assistance Program (BCAP) is designed to support the establishment and production of eligible crops for conversion to bioenergy in selected BCAP project areas and to assist agricultural and forest land owners and operators with collection, harvest, storage and transportation of eligible material for use in a biomass conversion facility. The rules under BCAP are currently under revision. More information is available at: www.fsa.usda.gov/FSA/webapp?area=home&subject=ener&topic=bcap

Section 3: Environmental Considerations

Introduction

This section addresses the potential environmental impacts of bioenergy technologies, emphasizing air and water quality and waste management. It also includes state and federal environmental laws and regulations that pertain to bioenergy projects in Montana.

A bioenergy facility may be a cost-effective way to meet your energy needs and environmental goals. The facility could: create energy as steam, heat, electricity and liquid fuels; reduce reliance on fossil fuels; provide jobs; or reduce impacts on air quality from open-burning of biomass residues. However, bioenergy facilities also may have some adverse effects. Bioenergy technologies have the potential to produce air and water pollutants, and the processes involved in these technologies may produce solid, liquid, or hazardous wastes. Table 13 lists the various bioenergy technologies and their potential environmental emissions.

Each project is unique and may require a detailed analysis of air quality, water quality, geology, location of the facility and other factors. Bioenergy project developers should contact the appropriate DEQ bureaus and other agencies to find out the possible environmental constraints on a proposed project.

Other environmental and site-specific considerations must be included in the project’s economic evaluation because they may result in unique economic or financial demands. Noise caused by construction, equipment operation and trucks may require mitigation. The bioenergy facility may require community services or may present health or safety hazards.

The Montana Environmental Policy Act (MEPA) (MCA 75-1-101, *et seq*) applies to any major state agency action that might significantly affect the quality of the human environment. All the state agencies have adopted rules implementing this act and defining the circumstances that require an environmental assessment (EA) or an environmental impact statement (EIS). The agencies also establish fees, comment periods, public hearings and time requirements. For more information, contact the Montana Environmental Quality Council (EQC).

Table 13									
BIOENERGY TECHNOLOGIES AND POTENTIAL ENVIRONMENTAL EMISSIONS									
Potential Environmental Emissions									
	Water Pollution		Air Pollution*					Solid Waste Disposal	Hazardous Waste
	•	Hazardous Air Pollutants (HAPS)	Sulfur Oxides	Nitrogen Oxides	Volatile** Organic Compounds	Particulates	Carbon Monoxide		
Alcohol Production	•	•	•	•	•	•	•	•	•

Anaerobic digestion	•	•				•		•	
Electric generation/ combined heat and power		•	•	•	•	•	•	•	•
Densification			•	•	•	•	•	•	
Direct combustion		•	•	•	•	•	•	•	•
Gasification	•	•	•	•	•	•	•	•	•
Landfill gas	•	•						•	
Liquefaction	•	•	•	•	•	•	•	•	•
Biodiesel and oilseed extraction	•	•				•		•	•
Pyrolysis	•	•	•	•	•	•	•	•	•

*Potential air pollution depends on the size of burner and type of fuel.

** PAH means polyaromatic hydrocarbons.

*** Particulates include particulate matter less than 10 microns and greater than 2.5 microns in diameter (PM-10) and 2.5 microns or less in diameter (PM-2.5)

AIR QUALITY

Overview

A Montana Air Quality Permit and Title V Operating permit from the Department of Environmental Quality (DEQ) Air Resources Management Bureau is required for the construction, installation and operation of equipment or facilities that may directly or indirectly cause or contribute to air pollution, pursuant to Title 17, Chapter 8, Subchapter 7. (ARM 17-8-745) A city or county may impose standards that are equal to or stricter than DEQ standards through its own air pollution permit program, in lieu of the DEQ permit program. (see Urban Areas/Municipalities) The EPA generally has jurisdiction over air quality on Indian Reservations. (see Indian Reservations)

An air quality permit to construct or operate a new or altered air pollution source cannot be issued unless the source is able to comply with the ambient air quality standards, emission limitations and other rules adopted under the Montana Clean Air Act and the applicable requirements of the Federal Clean Air Act. Some exceptions are listed in the rules.

Ambient air quality refers to the condition of the air in the surrounding environment. Title I of the Federal Clean Air Act Amendment of 1990 includes provisions for attaining and maintaining the National Ambient Air Quality Standards (NAAQS). (see Air Quality Laws and Regulations) These ambient air standards apply to a bioenergy facility. The emissions of any new or modified facility will have to be analyzed to determine how those emissions affect the air quality of the surrounding area.

Emissions are substances discharged into the environment as waste material, such as flue gas and particulates from smokestacks. For permitting purposes, emissions of air pollutants from a bioenergy facility should be calculated based on the maximum design capacity of the facility and should consider Best Available Control Technology (BACT), pursuant to ARM 17-8-752. Any project with emissions that exceed the permitting threshold, as a result from the combustion of fuel, must meet air quality rules. New or modified fuel-burning installations must meet air quality rules for particulate matter, shown in Fig. 13, but BACT must also be used. A BACT analysis is required for all regulated pollutants including PM10 and PM2.5; however the final permit determination and emission limitations may be more stringent than values shown in Fig. 13. The air pollutants regulated by Montana are listed in Table 9, but are subject to change as new rules are developed.

Table 14: Air Pollutants Regulated by the State of Montana

Carbon Monoxide (CO)
Nitrogen Oxides (NOx)
Sulfur Dioxide (SOx)
Volatile Organic Compounds (VOCs)
Particulate Matter PM-10
Particulate Matter PM-2.5
Lead
Hazardous Air Pollutants (HAPs)
Ozone (O3)
Asbestos
Benzene Fluorides
Hydrogen Sulfide (H2S)

Air Quality Laws and Regulations

The federal Clean Air Act of 1970 governs federal and state air pollution control programs. The most recent amendment, signed into law in November 1990, directs EPA to implement strict environmental policies and regulations to ensure cleaner air for all Americans. Under the Clean Air Act, EPA sets limits on certain air pollutants anywhere in the United States and sets limits on emissions of air pollutants coming from sources like chemical plants, utilities and steel mills. EPA must approve state, tribal and local agency plans for reducing air pollution.

Sections of the Clean Air Act that are most likely to have an effect on bioenergy facilities are in Titles I and II. The areas under Title I, Air Pollution Prevention and Control, that may affect bioenergy projects include: NAAQS, emissions, prevention of significant deterioration (PSD), hazardous air pollutants, particulates and nonattainment areas.

Title II of the Clean Air Act relates to the control of mobile source emissions, such as those from cars and trucks. In 1992, EPA began plans to lessen carbon monoxide emissions in nonattainment areas during the winter months. This program required fuel with a 2.7 percent oxygen content. The oxygenated fuels are sold for a minimum of four months of the year, unless EPA reduces the time frame in response to a state request. Two clean fuels programs were identified in the Clean Air Act Amendment of 1990. For these programs, “clean fuels” are defined as compressed natural gas, ethanol, methanol, liquefied petroleum gas, electricity, reformulated gasoline, and possible other fuels. As a part of this program, Montana developed a program to use oxygenated fuels in Missoula beginning November 1, 1992, because it was the only Montana city that violated the carbon monoxide standard at that time.

The EPA administers the Clean Air Act by delegating major authority to the states. Each state develops and manages its own State Implementation Plan (SIP) on approval by EPA. Areas of the state are classified according to whether they meet or exceed the NAAQS. Primary and secondary NAAQS and MAAQS, shown in Table 15, set limits to protect public health, plants, animals, materials, visibility, and other aspects of public welfare. NAAQS have been set for: carbon monoxide (CO); nitrogen dioxide (NO₂); sulfur dioxide (SO₂); ozone (O₃); PM-10 (particulate matter less than 10 microns in diameter); PM-2.5 (particulate matter less than 2.5 microns in diameter); and lead (Pb).

State standards (MAAQS) can be more, but not less, stringent than NAAQS. In general, an area is designated as attainment when existing concentrations of all regulated pollutants are below the NAAQS and MAAQS. Likewise, an area is designated as nonattainment when existing concentrations of one or more regulated pollutants are above the MAAQS or NAAQS.

Bioenergy projects locating in nonattainment areas or other areas exceeding the standards may be required to meet more stringent air pollution emission standards, depending on local existing air quality. Detailed information on classification requirements and attainment and nonattainment areas is available from the DEQ, Air Resources Management Bureau.

National Ambient Air Quality Standards (NAAQS)

The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards (40 CFR part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. *Primary standards* set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children and the elderly. *Secondary standards* set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation and buildings.

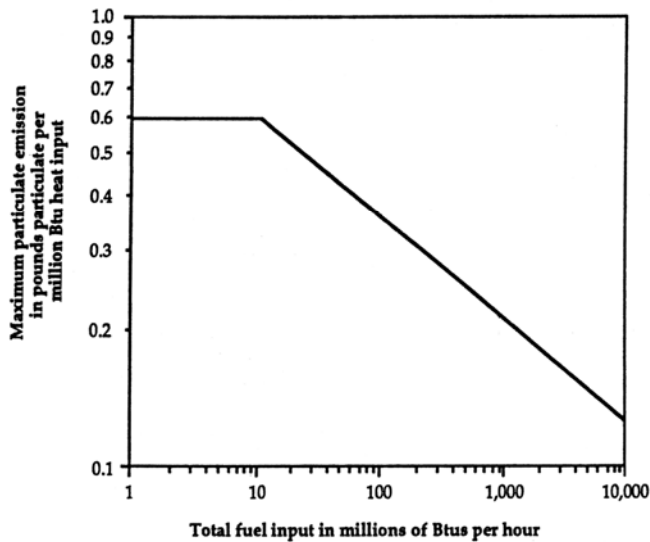
The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants (carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide), which are called “criteria” pollutants. Learn more about NAAQS at <http://www.epa.gov/air/criteria.html>.

The emissions of any new or modified facility in Montana will have to be analyzed under NAAQS to determine how those emissions will affect the air quality of the surrounding area.

Emissions are substances discharged into the environment as waste material, such as flue gas and particulates from smokestacks. For permitting purposes, emissions of air pollutants from a bioenergy facility should be calculated based on the maximum design capacity of the facility and should consider Best Available Control Technology (BACT), pursuant to ARM 17.8.752. Any project with emissions that exceed the permitting threshold, as a result from the combustion of fuel, must meet air quality rules. New or modified fuel-burning installations must meet air quality rules for particulate matter, shown in Fig. 13, but BACT must also be used. A BACT analysis is required for all regulated pollutants including PM10 and PM2.5; however the final permit determination and emission limitations may be more stringent than values shown in Fig. 13. The air pollutants regulated by Montana are listed in Table 9, but are subject to change as new rules are developed.

FIGURE 13

MAXIMUM ALLOWABLE EMISSION OF PARTICULATE MATTER FROM NEW FUEL-BURNING INSTALLATIONS



(Source: ARM 17.8.309)

State and federal air quality rules regulate visible emissions from a source, such as a boiler, power plant, or any other emission source that exhausts through a stack or a vent that might exhibit a plume. Opacity limitations are listed in ARM 17-8-304 and range from 10 to 40 percent, depending on the type and installation date of the source. Testing for visible emissions from a pollution source is performed by a trained observer in the field or by an in-stack monitor.

Special rules apply to wood-waste burners. DEQ policy encourages the complete utilization of wood waste and restricts, wherever practical, all burning of wood wastes for disposal (incineration). State air quality rules relating to wood-waste burners place restrictions on burner construction, reconstruction, or substantial alteration; specify temperature measurement devices

for combustion and stack temperatures; and establish minimum operating temperatures and maximum stack gas opacity. For the complete rules related to wood-waste burners, see ARM 17-8-320.

During the forest fire season (May 1 through September 30) or as extended, open burning permits are required from the appropriate fire protection agency to perform prescribed forest burning to burn slash, set a land-clearing or debris-burning fire, or light any open fire. The recognized fire protection agency may be DEQ or the county. In addition, depending upon the time of year and the request, air quality permits pursuant to Title 17, Chapter 8, and Subchapter 6 may be required from DEQ, Air Resources Management Bureau. (see Air Quality)

Local and county governments are responsible for enforcement of odor control rules. Any business or person using any device, facility, or process that discharges odorous matter, vapors, gases, dusts or combination of these that creates odors is subject to regulation. That person must provide, properly install, maintain and operate odor control devices or procedures as specified by local authorities.

Prevention of Significant Deterioration (PSD)

The purpose of the PSD program is to make sure that areas with clean air remain clean. PSD rules divide the state into two air quality classifications. (see ARM 17-8-806) Class I areas allow small increases in pollution and include national parks, some wilderness areas and some Indian Reservations. Montana's Class I areas are shown in Fig. 14. The rest of Montana is designated Class II for PSD air quality purposes. (see Air Quality)

PSD standards apply when a major new source of air pollution is proposed where ambient air quality is better than the NAAQS. These standards generally apply to large sources that emit more than 100 tons per year of any pollutant. In these cases, a more stringent and lengthy review procedure may apply to minimize air quality degradation within the state. The review may include one year of pre-application baseline data, control technology review, and air quality impact modeling before the application can be considered complete. These requirements should be considered when the project's permit calendar is developed because they may extend the permit application time requirements more than a year. DEQ recommends a preliminary meeting with developers of such projects to better define the needs for permit applications for a specific project.

Nonattainment Area New Source Review

The Clean Air Act Amendment of 1990 set standards and procedures to designate nonattainment areas and their boundaries. A nonattainment area is a geographic area where the quality of the air is worse than that allowed by federal air pollution standards. Prevention of significant deterioration requirements do not apply in nonattainment areas. Title I includes provisions for attaining and maintaining the NAAQS. These provisions generally apply to large sources emitting over 100 tons per year of any pollutant. For a proposed facility, these requirements include applying the Lowest Achievable Emission Rate (LAER) and arranging for emission reductions (offsets) from other existing sources in the nonattainment area that are greater than the proposed facility's emissions.

Hazardous Air Pollutants

The Clean Air Act of 1970 authorized EPA to establish special standards for hazardous air pollutants (HAPs). The 1990 Amendment establishes a long list of hazardous air pollutants, commonly called air toxics. Over the next 10 years, EPA developed regulations to restrict emissions for various categories of air toxic emitting facilities. The new law applies to a “major source,” or any facility that emits 10 tons per year of any single HAP or 25 tons per year of any combination of HAPs. Other restrictions may apply to facilities with lower levels of emissions under the “area source” requirements.

Bioenergy facilities that exceed emission requirements for any of the 189 air toxics regulated by EPA may be required to install Maximum Available Control Technology (MACT) to comply with the regulations.

TABLE 15

MONTANA AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Montana Standard	Federal Primary Standard	Federal Secondary Standard
10 microns or less (PM-10)	150 µg/m ³ 24-hr. average* 50 µg/m ³ annual average***	150 µg/m ³ 24-hr. average*	Same as primary standard
2.5 microns or less (PM 2.5)	None	35 µg/m ³ 24-hr. average* 15 µg/m ³ annual average*****	Same as primary standard for both
Sulfur dioxide	0.02 ppm annual average 0.10 ppm 24-hr. average* 0.50 ppm 1-hr. average**	0.03 ppm annual average 0.14 ppm 24-hr. average*	0.5 ppm 3-hr. average*
Carbon monoxide	9 ppm 8-hr. average* 23 ppm hourly average*	9 ppm 8-hr. average* 35 ppm hourly average*	9 ppm 8-hr. average*
Nitrogen dioxide	0.05 ppm annual average 0.30 ppm hourly average	0.05 ppm annual average	Same as primary standard
Photochemical oxidants (ozone)	0.10 ppm hourly average*	0.12 ppm hourly average* 0.075 ppm 8-hr. average	Same as primary standard for both
Lead	1.5 µg/m ³ 90-day average	0.15 µg/m ³ 90-day average	Same as primary standard
Foliar fluoride	35 µg/g grazing season 50 µg/g monthly average	None	None
Hydrogen sulfide	0.05 ppm hourly average*	None	None
Settled particulate (dustfall)	10gm/ m ² 30-day average	None	None
Visibility	Particle scattering coefficient of 3 x 10 ⁻⁵ per meter annual average****	None	None

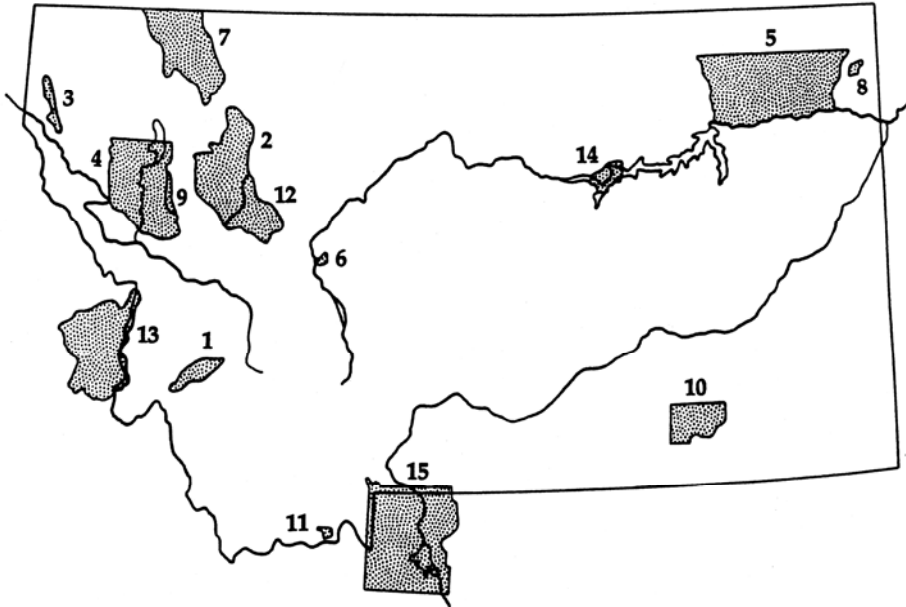
Gm/m² – grams pollutant per square meter at sample site
 µg/g – micrograms pollutant per gram of sample
 µg/m³ – micrograms pollutant per cubic meter of sampled air
 ppm – parts pollutant per million parts of sampled air

- * Not to be exceeded more than once per year
- ** Not to be exceeded more than 18 time per year
- *** 3-yr average of the arithmetic means over a year exceeds the standard
- **** Applies to PSD mandatory Class I areas
- ***** 3-yr average of the annual mean exceeds the standard

Source: State of Montana, Air Quality Monitoring Network Plan, June 2009, Montana Department of Environmental Quality, Air Resources Management Bureau)

FIGURE 14

MONTANA PSD CLASS I AREAS



- | | |
|--------------------------------------|--|
| 1. Anaconda-Pintlar Wilderness | 9. Mission Mountain Wilderness |
| 2. Bob Marshall Wilderness | 10. Northern Cheyenne Indian Reservation |
| 3. Cabinet Mountain Wilderness | 11. Red Rock Lakes Wilderness Area |
| 4. Flathead Indian Reservation | 12. Scapegoat Wilderness |
| 5. Fort Peck Indian Reservation | 13. Selway-Bitterroot Wilderness |
| 6. Gates of the Mountains Wilderness | 14. UL Bend Wilderness Area |
| 7. Glacier National Park | 15. Yellowstone National Park |
| 8. Medicine Lake Wilderness Area | |

PM-10 Standards

On July 31, 1987, EPA wrote air quality standards for particulate matter known as PM-10. The standards changed the focus from larger particles, or total suspended particulates (TSP), to smaller, inhalable particles with an aerodynamic diameter of 10 microns or less. The size of 10 microns would be similar to one-tenth the diameter of one strand of human hair. These are invisible particulates that are proven to cause health problems.

The EPA and the State of Montana have analyzed each Montana community to determine if it meets or exceeds PM-10 ambient air standards. Butte, Columbia Falls, Kalispell, Lame Deer, Libby, Whitefish, Missoula, Polson, Ronan, and Thompson Falls exceed the PM-10 ambient air standards and are designated as nonattainment areas. (see Table 16) All other communities are designated as meeting the PM-10 ambient air quality standard.

The DEQ is responsible for development of the PM-10 ambient air standards compliance plans, except for Missoula where the Missoula County Health Department has authority, and except for the following communities located on Indian reservations where EPA retains authority: Polson, Ronan, Lame Deer and Hays. The PM-10 SIP development process is more significant to bioenergy projects because PM-10 particulate matter is a common pollutant from bioenergy projects and numerous parts of the state are already designated nonattainment.

PM-2.5 Standards

On December 18, 2006, EPA revised the NAAQS for fine particle pollution. The revisions added two categories of particle pollution: fine particles (PM-2.5), which are 2.5 micrometers in diameter and smaller and coarse particles, which are larger than 2.5 micrometers and smaller than 10 micrometers in diameter (PM-10).

**Table 16
AREAS EXCEEDING NATIONAL AMBIENT
AIR QUALITY STANDARDS**

	Carbon Monoxide (CO)	Sulfur Dioxide (SO2)	Lead (Pb)	Particulates	
				PM-10*	PM-2.5**
Butte				.	
Columbia Falls				.	
East Helena		.	.		
Kalispell				.	
Lame Deer				.	
Laurel		.			
Libby				.	.
Missoula				.	
Polson				.	
Ronan				.	
Thompson Falls				.	
Whitefish				.	
*PM-10—particles with an aerodynamic diameter less than 10 microns **PM2.5— particles with an aerodynamic diameter less than 2.5 microns					

WASTE MANAGEMENT

Solid Waste Disposal (Nonhazardous)

Solid waste that is not listed as hazardous includes, but is not limited to: garbage; rubbish; refuse; ashes; sludge from sewage treatment plants, water supply treatment plants, or air pollution control facilities; construction and demolition wastes; dead animals, including offal; discarded home and industrial appliances; wood products or wood by-products; and inert materials. Solid waste does not mean municipal sewage, industrial wastewater effluents, mining wastes regulated under the mining and reclamation laws administered by the DEQ, slash and forest debris regulated under laws administered by DNRC or marketable by-products.

A Solid Waste Management System License is required from the DEQ Solid Waste Section to establish and operate a solid waste management system facility. Sites for these facilities must be approved and licensed by DEQ and validated by local health officials. Resource recovery systems that control the storage, treatment, recycling or recovery of solid wastes are called solid waste management systems.

Any bioenergy facility storing solid waste, such as hog fuel, wood waste or refuse-derived fuel may require a Solid Waste Management System License. (see Waste Management) For more information on specific wastes or facilities, contact the DEQ Solid Waste Section.

Facilities that produce solid waste must dispose of it at a licensed solid waste management facility. Solid waste must be transported in a manner that prevents it from discharging, dumping, spilling, or leaking from the transport vehicle. A possible exception may apply for a person who owns or leases more than five acres of land that is not within a subdivision. Under certain conditions, that person may dispose of his own solid waste that is generated in reasonable association with his household or agricultural operations on his own land as long as the disposal does not create a nuisance or public health hazard. For more information, contact the DEQ Solid Waste Section.

Discharges of pollutants into state waters from a point source are regulated by the Montana Water Quality Act and require either a Montana Pollutant Discharge Elimination System (MPDES) Permit or a Montana Groundwater Pollution Control System (MGWPCS) Permit. (see Water Quality) Problems may occur if leachate or contaminated water is produced when rain or other water passes through solid waste. The leachate can include various minerals, organic matter or other contaminants and can contaminate surface water or groundwater.

The DEQ specifies that owners and operators of certain municipal solid waste landfills and other disposal sites that accept household waste must monitor groundwater. This regulation applies to facilities that were in operation on October 1, 1989, and serve a geographic area with 5,000 or more people. See MCA 75-10-207 for details of the monitoring requirements.

Montana law requires a license — a Small Biodiesel Producer License — for biodiesel producers using used fry oil in their production, because it is considered resource recovery/recycling. (DEQ Solid Waste Section) In addition, the Montana Public Service Commission (PSC) issues Class D Certificates of Public Convenience and Necessity for motor carriers to transport solid waste, including used cooking oil, for disposal and landfill.

Recycling License (if using used fry oil for a feedstock):
Solid Waste Management System License: DEQ

Hazardous Waste Disposal

Hazardous waste is a waste that may cause or contribute to death or serious illness. Further, it may pose a substantial hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed. A waste is categorized as hazardous if it is included in the EPA rules listing specific hazardous wastes or if standard tests show it to be ignitable, corrosive, reactive or toxic. Hazardous waste may occur as a solid, liquid, gas or semi-solid.

The Montana Hazardous Waste Act (MCA 75-10-401, *et seq*) and the corresponding rules (ARM 17-53-101, *et seq*) were adopted to administer and enforce a hazardous waste program pursuant to the federal Resource Conservation and Recovery Act (RCRA) of 1976. DEQ regulates the permitting and siting of hazardous waste management facilities. These facilities are required to comply with detailed hazardous waste reporting and monitoring requirements.

Any operation generating hazardous wastes is required to register with the DEQ Waste and Underground Tank Management Bureau, obtain an identification number, pay a sliding-scale fee based on the amount of waste generated annually and renew the registration annually. A facility that produces 100 kilograms (approximately 220 pounds) or more of hazardous waste or 1 kilogram (approximately 2.2 pounds) or more of acute hazardous waste within any calendar month will be required to register and comply with all reporting and transporting rules. Anyone who purchases or uses 20 gallons or more of halogenated solvents in a year is also required to register with DEQ.

Transporters of hazardous waste must obtain an identification number from DEQ. Transporters who maintain offices, terminals, depots, or transfer facilities within Montana related to their hazardous waste transportation activities must register with DEQ, Waste and Underground Tank Management Bureau.

Detailed reporting rules require hazardous waste producers to fill out manifest forms specifying the source, amount, and destination of the wastes. The transporter and the receiving hazardous waste management facility must sign and date the manifest to acknowledge receipt of the waste shipment. This process helps the waste producer ensure that the waste has reached its destination at a properly licensed hazardous waste disposal site.

DEQ has established procedures for dealing with problems that occur in the hazardous waste transportation and reporting process. DEQ may, by rule, prescribe conditions under which specified hazardous wastes or specified quantities of hazardous wastes may be disposed of at disposal sites licensed by DEQ.

The hazardous waste rules also include regulations related to leaking underground storage tanks. Facilities covered under these rules include, but are not limited to: 1) tanks used to contain a regulated substance of which 10 percent or more of the volume is beneath the surface of the ground; and 2) any underground pipes connected to a storage tank and used to contain or transport a regulated substance, whether the storage tank is entirely above ground, partially above ground, or entirely underground. An owner or operator of an underground storage tank who discovers or is provided evidence that the tank may have leaked must immediately notify DEQ.

Any person who violates sections of the Montana Hazardous Waste Act, the related rules, or the terms of a Hazardous Waste Permit may be subject to civil or criminal penalties, which may include a fine or imprisonment.

Bioenergy producers are responsible for determining if any of their waste products or streams is hazardous wastes. They also are responsible for properly collecting, storing, recovering, or transporting the hazardous waste to a licensed disposal site. EPA has identified a number of hazardous wastes (40 CFR Sec. 261-10 to 261-33) that must be kept under control from their origin to their point of disposal.

Bioenergy facilities have the potential to generate hazardous wastes or waste streams that contain hazardous constituents, especially when they are not operating under ideal conditions. For instance, a municipal solid waste combustor that is not performing well can produce toxic substances such as hydrocarbons, creosote, and other organic compounds that result from incomplete combustion. These toxic substances should be captured by pollution control equipment and may need to be handled and disposed of as hazardous wastes.

Under certain operating conditions, developing bioenergy technologies such as gasification, liquefaction, and pyrolysis have the potential to produce wood tar that contains creosote, benzopyrene and phenol, which are listed as hazardous wastes. Plants that produce regulated quantities of hazardous wastes should be designed and operated to produce the least possible quantity of hazardous waste. Plants that produce hazardous wastes under either normal operating conditions or less than ideal operating conditions must be registered with DEQ as hazardous waste generators. DEQ must be presented with a plan to properly collect, handle, store and transport the hazardous waste to a licensed disposal site, or a permit must be obtained to operate the facility as a hazardous waste management facility.

Commercial products used in bioenergy production, such as acids, bases, and solvents can be classified as hazardous waste. Bioenergy products such as methanol, butanol, hydrocarbons and diesel fuel substitutes are combustible and can be classified as hazardous wastes if they are spilled. Acid and base effluent streams will not be subject to hazardous waste control if they are properly handled and neutralized under carefully controlled conditions.

Bioenergy producers that use or produce commercial products that can be classified as hazardous wastes when discarded must register with DEQ as producers of hazardous waste. These producers also must arrange for proper disposal of their wastes at a licensed disposal site. The registration and planning required will decrease the possibility of spilling or improper handling of hazardous waste.

WATER QUALITY

A permit from DEQ, Water Protection Bureau, Permitting and Compliance Division is required to construct, modify, or operate a waste disposal system, or to construct or use any outlet for discharge of sewage, industrial wastes or other wastes into state surface water or groundwater. Plans and specifications for tailings ponds, leaching pads and holding facilities must be submitted to DEQ for review and approval at least 180 days before the beginning of construction and an application filed for a Montana Pollutant Discharge Elimination System (MPDES) Permit or a Montana Groundwater Pollution Control System (MGWPCS).

A permit must be filed no less than 180 days prior to the operation of a point source. Application information must include plans and specifications, site plans, descriptions of adjacent state waters, soil conditions, groundwater characteristics, process and waste flow diagrams and volume and nature of projected discharges. Applications for a short-term exemption from water quality standards must be made on forms provided by DEQ.

In addition, any construction activity that results in the disturbance of one acre of total land area or more requires Permit for Storm Water Discharges Associated with Construction Activity (Stormwater Construction permit). Construction activity includes the disturbance of less than one acre of total land area that is part of a "larger common plan of development or sale" if the larger common plan will ultimately disturb one acre or more. General Permits are issued through the Department of Environmental Quality (DEQ). Other storm water permit coverage may be required for industrial sites.

- Montana Air Quality Permit/Title V Operating Permits (DEQ)
- Beneficial Water Use Permit (DNRC)
- Hazardous Waste Management Facility Permit (DEQ)
- Hazardous Waste Reporting Requirements (DEQ)
- Montana Groundwater Pollution Control System (MGWPS) Permit (DEQ)
- Montana Pollutant Discharge Elimination System (MPDES) Permit (DEQ)
- General Permit for Storm Water Discharges Associated with Construction Activity
- National Pollutant Discharge Elimination System (NPDES) Permit
- Odor Control (Local govt.)
- Solid Waste Management System License (DEQ)
- Stream Protection Act Permit (DFWP)

Stream Bed and Land Preservation Permit (310 Permit, normally local conservation dist.)

All discharges of pollutants authorized by a MPDES or MGWPCS Permit into state waters must be consistent with the conditions of the permit. The discharge of pollutants in excess of the permit's restrictions into state waters constitutes a violation of the permit. State waters must be free of discharges that: 1) settle to form sludge deposits; 2) create floating debris; 3) produce odors; 4) create toxic concentrations harmful to human, animal, or plant life; or 5) create conditions capable of producing undesirable aquatic life. (see Water Quality, page 105.)

All bioenergy projects that discharge liquid or solid effluents into state surface water or groundwater must get a permit from DEQ. No exceptions are made on the basis of the amount or concentration of the discharge. Bioenergy facilities are treated as point sources and are subject to state effluent standards applicable to such sources. EPA standards applicable to point sources are the least stringent standards for these sources. DEQ, through the MPDES Permit process, can require application of stricter effluent standards to protect the state's water quality.

Section 4: Permits by Category

Introduction

This section describes bioenergy permits by category, including procedures, costs, and some exceptions. Table 1 identifies the permit categories that might apply to each technology. If there is a question about whether a permit applies, contact the appropriate agency for more information.

Table 17: Permits That Might Be Required for Bioenergy Technologies

	Agriculture	Air Quality	Alcohol Production	Building, mechanical, electric, and plumbing	Forest clearing and burning	Highways/transportation	Land Use	Occupational safety and health	Waste management	Water quality	water use	Other
Alcohol production	•	•	•	•	•	•	•	•	•	•	•	•
Anaerobic digestion		•		•		•	•	•	•	•	•	
Combined heat and power		•		•	•	•	•	•	•	•	•	
Densification		•		•	•	•	•	•	•	•	•	
Direct combustion		•		•	•	•	•	•	•	•	•	
Gasification		•		•	•	•	•	•	•	•	•	
Landfill gas				•			•	•	•	•	•	
Liquefaction		•		•	•	•	•	•	•	•	•	
Biodiesel and oilseeds extraction	•	•		•		•	•	•	•	•	•	•
Pyrolysis		•		•	•	•	•	•	•	•	•	

AGRICULTURE

Permit: Commodity Dealers License

Description

Any person engaged in a business that includes buying, exchanging, negotiating, or soliciting the sale or transfer of agricultural commodities in Montana is considered a commodity dealer and must obtain a license before conducting business in the state. A commodity dealer also is required to be bonded.

Exceptions

The term *commodity dealer* does not apply to: a person engaged solely in storing, shipping, or handling agricultural commodities for hire; a person who buys agricultural commodities from a licensed commodity dealer; a person who does not purchase more than \$30,000 worth of agricultural commodities from producers during a licensing year; a person who is the producer of agricultural commodities that the person actually plants, nurtures, and harvests; a person whose trading in agricultural commodities is limited to trading in commodity futures on a recognized futures exchange; or a person who buys agricultural commodities used exclusively for the feeding of livestock and not for resale.

Statute: 80-4-601, *et seq.*, and 80-4-402(4), MCA

Cost

The annual fee for a commodity dealer license is \$464 per facility. The license fee for a commodity dealer who is licensed as a seed dealer is \$100 a year if the majority of the dealer's annual expenditures for agricultural commodities are for agricultural seed intended for resale as agricultural seed.

Procedure

An application for a license to engage in business as a commodity dealer must be filed with the Montana Department of Agriculture on proper forms. The application must include information such as the name of the applicant, the location of the principal places of business, a sufficient and valid bond, the number and description of trucks to be used to transport agricultural commodities, a financial statement, and any other information requested by the department. A license is issued annually and may be renewed by submitting all requiring documents.

Contact

Montana Department of Agriculture (DOA), Agricultural Sciences Division

Permit: Commodity Warehouse License**Description**

A commodity warehouse is an “elevator, mill warehouse, sub terminal grain warehouse, public warehouse, or other structure or facility in which, for compensation, agricultural commodities are received for storage, handling, processing, or shipment.” Facilities that maintain a United States Warehouse Act license need not apply for the state’s license. A public warehouse operator must post storage and handling charges for the facility. Operators must maintain current records of all agricultural commodities stored, conditioned, handled, or shipped.

Exceptions

None

Statute: 80-4-501, *et seq.*, and 80-4-402(4), MCA

Cost

The annual fee for a commodity warehouse license is \$464 per facility.

Procedure

An application for a license to operate a commodity warehouse must be filed with the Montana Department of Agriculture on proper forms. The application must include evidence of an effective insurance policy, license fee, a current drawing showing storage facilities and capacity of the warehouse, a current financial statement, a sufficient and valid bond, a sample warehouse receipt, and any other information requested by the department. A license is issued annually and may be renewed by submitting all required licensing documents.

Contact

Montana Department of Agriculture (DOA), Agricultural Sciences Division

Permit: Feed Dealers Permit**Description**

Co-products, such as distillers grains or oilseed meal manufactured for distribution or distributed as commercial feed in Montana, require a permit and registration with Montana Department of Agriculture (DOA).

Exceptions

A license is not required for a distributor who distributes only pet food or specialty pet foods, but these products must be registered with DOA.

Statutes: 80-9-201, *et seq.*, and 80-9-206, MCA (Montana Clean Air Act)

Rules: ARM 4.12.219, *et seq.*

Cost

All new applicants must pay a non-refundable fee each calendar year to license a facility, distribution point, or point of invoicing. License renewals are \$75. A late fee for renewal applications received after January 1 may be imposed.

Feed Dealer and Registration Fees

Annual Feed License:

\$75.00 - Renewal

\$100.00 - Renewal application received after January 1st

\$100.00 - New applicant or new location

Annual Feed Inspection Fee - 18 cents per ton on all commercial feeds, excluding pet foods.

Procedures

An application may be obtained by filing with DOA. Requirements include: the applicant's name; place of business; mailing address; facility location; an indication of whether the facility manufactures feed, distributes feed, or both; and an indication of whether or not the person applying for the license is a guarantor. Commercial feed that will be distributed in Montana must be registered with DOA and must comply with labeling requirements.

Contact

Montana Department of Agriculture (DOA), Agricultural Sciences Division

Permit: Fertilizer Dealer Registration

Description

Co-products, such as distillers grains or oilseed meal manufactured for distribution or distributed as commercial fertilizer in Montana, require a permit and registration with Montana Department of Agriculture (DOA). All commercial fertilizer or soil amendment retailers and distributors must obtain a Fertilizer/Soil Amendment Dealer License before conducting business in or into Montana. Dealers who sell exclusively un-manipulated animal or vegetable manures or specialty fertilizer (packaged for non-farm use) do not need a Fertilizer/Soil Amendment Dealers License. Each facility distributing or handling commercial fertilizers or soil amendments in this state must have a license. Licensing must be obtained before January 1st of each year.

Inspections of fertilizer are made at manufacturing, storage, distribution, transportation, border crossing and retail and end-user locations statewide. Manufacturers are required to obtain proper licenses and are checked for good manufacturing practices. Any person or business that distributes any type of fertilizer or soil amendment, except un-manipulated animal or vegetable manures or specialty fertilizers, is required to obtain a license. A license is required for each facility distributing into Montana and for each handling facility in the state.

Fertilizer form: <http://agr.mt.gov/licensing/forms/fertdlrlicfrm.doc>

Exceptions

Statutes: 80-9-xxx, *et seq.*, and 80-9-206, MCA (Montana Clean Air Act)

Rules: ARM _____, *et seq.*

Cost:

Annual Dealer License Fees:

\$75.00 — Application for licensing a new location
\$50.00 — Renewal application received before January 1st
\$75.00 — Renewal Application received after January 1st

Fertilizer Assessments Fees:

\$1.00 per ton — All fertilizers except anhydrous ammonia
\$1.70 per ton — All anhydrous ammonia
\$0.10 per ton — All soil amendments (if reporting 50 tons or more)

Fertilizer Registration - Annual Product Registration Fees:

\$45.00/product — Specialty Fertilizer
\$30.00/product — Commercial Fertilizer
\$20.00/product — Soil Amendments

Contact

Montana Department of Agriculture (DOA)

Permit: Feed and Fertilizer Inspection and Label Review (Fertilizer / Feed Inspector, 406 444-0512)

Description

Co-products, such as distillers grains or oilseed meal manufactured for distribution or distributed as commercial fertilizer in Montana, require a permit and registration with Montana Department of Agriculture (DOA).

Statutes: 80-9-201, *et seq.*, and 80-9-206, MCA (Montana Clean Air Act)

Rules: ARM, *et seq.*

Contact

Montana Department of Agriculture (DOA), Fertilizer and Feed Label review

AIR QUALITY

Permit: Montana Air Quality Permit Title V Operating Permit

Description

A Montana air quality permit and/or a Title V operating permit may be required from the Montana Department of Environmental Quality (DEQ) for the construction, installation, and operation of equipment or facilities that may cause or contribute to air pollution.

Exceptions

Exceptions listed in the rule include, but are not limited to: residential heating units; motor vehicles, trains, or aircraft; equipment for road construction, except stationary sources; and other sources that emit less than specified amounts.

Statute: 75-2-101, *et seq.*, and 75-2-218, MCA

Rules: ARM 17-8-744, *et seq.*, and 17-8, Subchapter 12, *et seq.*

Cost

DEQ assesses an application fee and an operating fee from applicants and permit holders to fund the air quality permitting program and to implement and enforce the terms and conditions of the air quality permit. Contact DEQ for a fee schedule.

Procedures

Applicants must file an application with DEQ at least 180 days before construction begins, or if construction is not required, at least 120 days before installation, alteration, or use of the facility begins.

Applicants for air quality operating permits for new *major sources* (as defined by DEQ rule) may submit operating permit applications concurrently with an associated air quality permit applications. Existing facilities are required to submit an application within 12 months of becoming subject to the operating permit program.

The application for an operating permit requires more extensive public notification, including the requirement that the applicant notify surrounding states and the U.S. Environmental Protection Agency. Operating permits must be renewed every five years.

DEQ requires permit applications to be accompanied by plans, specifications and any other information necessary. DEQ has 180 days from the receipt of the completed application to decide whether an application for a permit requires an environmental impact statement (EIS). If an agency other than DEQ is the lead agency in the EIS preparation, then DEQ must make a decision within 30 days after the final EIS is issued. See timeline in Table 18.

Table 18: Timeline for public comment and permit approval

	Minor Sources	Project that is subject to certain federal regulations	Project for which an EIS is prepared by DEQ	Projects for which an EIS is prepared by another agency or under Title 82, chapter 4, parts 103
Public comment period after preliminary determination is issued	15-30 days	30 days	30 days	30 days
Time period for DEQ to approve or deny the permit	75-90 days	75-90 days	180 days	30 days after issuance of EIS

When DEQ approves or denies the application for a permit, any person who is adversely affected may appeal to the Montana Board of Environmental Review (BER) within 15 days of DEQ's decision.

Additional Information

Prevention of Significant Deterioration (PSD) Review (Rule: ARM 17.8.801, *et seq.*) When a major new source of air pollution is proposed to be constructed or modified in an area in compliance with ambient air quality standards, a more rigorous review procedure may apply. The review may include one year of pre-application baseline data, control technology review, air pollution impact modeling and other measures.

PSD standards do not apply in areas not currently in compliance with national ambient air standards (nonattainment areas).

DEQ must: 1) advertise in a newspaper of general circulation in the air quality control region affected by the proposed source that an application has been received, the DEQ's preliminary determination, the degree of increment consumption expected from the source, how written comments may be submitted and how the DEQ's final decision may be appealed to the Board; and 2) forward copies of the advertisement to the applicant, EPA Region VIII Administrator and area officials and agencies affected by the proposed construction.

New Source Review in Nonattainment Areas (Rule: ARM 17-8-901-17-8-906)

Major new or modified sources of air pollution locating in or near areas that are not attaining ambient air quality standards must meet additional permitting criteria, including obtaining emission offsets and installing control equipment that meets the *lowest achievable emission rate* (LAER).

Contact

Department of Environmental Quality (DEQ), Permitting and Compliance Division, Air Resources Management Bureau Local Government, Health Department

Permit: Open Burning Permit

Description

Any person, institution, business, or industry conducting any open burning and qualifying as a major open burner is required to have an air quality open burning permit. Open burning means combustion of any material directly in the open air without a receptacle or other than a furnace, multiple-chambered incinerator, or wood-waste burner. A major open burning source is one that will emit more than 500 tons per calendar year of carbon monoxide or 50 tons per calendar year of any other pollutant. Fire permits may also be required from local officials but not all burning in forested areas would require an air quality open burning permit.

Several types of burning activities are regulated and require permits:

A. Burning in Forested Areas: During the wildfire season (May 1 - September 30, or as extended), a permit is required from the recognized protection agency for the area (county, state or federal) to ignite a forest fire, slash-burning fire, land-clearing fire, debris-burning fire or an open fire in forested areas.

Exceptions

A permit is not required in a designated, improved campground.

B. County Permits: The county governing body may establish its own fire seasons each year and require an official written permit or permission to ignite a fire, including a slash-burning, land-clearing, debris-burning or open fire within the county protection area on any residential or commercial property, forest land, range land or crop land.

Exceptions

Permits are not required for recreational fires measuring less than four feet in diameter that are surrounded by a nonflammable structure and for which a suitable source of extinguishing the fire is available. However, a recreational fire may not be ignited if special restrictions prohibiting recreational fires have been established by an authority having jurisdiction.

C. Air Quality Permits for Burning: Air quality permits for major burns (open burning of approximately 100 acres in a given year) are required from DEQ. All open burners, major and minor, must comply with restrictions issued from September 1 through November 30 on the Ventilation Hotline (800-225-6779) or at the Monitoring Unit's website at <http://smokemu.org>. Open burning is prohibited by DEQ from December through February unless burning is conducted in the Eastern Montana Burning Zone.

DEQ may issue conditional air quality open burning permits for certain materials, including clean, untreated wood waste at landfills and industrial sources, as well as the burning of prohibited materials for the training of firefighters, or open burning in emergency situations, if certain departmental requirements described in ARM 17-8-611 to 17-8-612 are followed.

Statute: 7-33-2205, MCA (county permits), and 76-13-121, MCA (burning in forested areas)

Rule: ARM 17.8.601, *et seq.* (Air quality permits)

Cost

Air quality open burning permit fees are calculated by DEQ. Contact the Air Resources Management Bureau.

Procedure

Prior to major open burning, an application must be submitted on forms approved by DEQ. The application must contain a legal description and a detailed map of each planning site of open burning, the elevation of each planned site, and the average fuel loading or total fuel loading at each site to be burned. In addition, applicants must publish a notice in the legal section of the local newspaper no earlier than 10 days prior to the date the application will be submitted to DEQ. The estimated time for DEQ to process a correctly completed application form is 35 days from the date of a complete application, which includes the proof of publication of the public notice.

Contact

Department of Natural Resources and Conservation, Land and Unit Offices
Forestry Division, Fire and Aviation Management Bureau
Department of Environmental Quality, Permitting and Compliance Division, Air Resources Management Bureau
Board of County Commissioners
U.S. Department of Agriculture, Forest Service, Forest Supervisor

ALCOHOL PRODUCTION

Permit: Alcohol Fuel Producers Permit (Federal)

Description

The U.S. Department of Treasury, Alcohol and Tobacco Tax and Trade Bureau administers federal laws and regulations concerning taxation, production, storage, distribution, and use of distilled spirits to be used exclusively for fuel purposes under USC 5181. Federal laws require that every producer of ethyl alcohol properly qualify the plant and obtain a permit before beginning operation.

Exceptions

Distilled spirits means only ethanol or ethyl alcohol. The production of methanol or butanol does not require a permit from TTB. Small plants (10,000 proof gallons or less) do not require a bond but do require a permit

Law: 26 USC 5181

Rule: 27 CFR, Part 19, Subpart Y

Cost

Bonds are required; the amounts are related to plant size.

Procedure

An application for a Fuel Producers Permit (TTB Form 5110.74) must be completed and submitted, along with all required attachments, in triplicate to: Director, National Revenue Center, 550 Main St., Suite 8002, Cincinnati, OH 45202-5215. Required information may include site diagrams, expected production quantity, information about type and size of plant, description of stills and security and a list of feedstocks. TTB has detailed reporting requirements on production, use, and distribution of alcohol.

Contact

Director, National Revenue Center
U.S. Department of Treasury, Alcohol and Tobacco Tax and Trade Bureau (ATTTB)

Permit: Special Fuel Distributors License

Description

Any person who engages in the business of producing, refining, manufacturing, or compounding special fuel for sale, use, or distribution in Montana is considered a distributor and must be licensed as such. This includes biofuels such as ethanol and biodiesel. Prior to doing business, every fuel alcohol distributor must obtain a Special Fuel Distributors License.

Exceptions

None

Law: 15-70-511, MCA

Rule: ARM 18.9.101, *et seq.*

Cost
None

Procedure

An applicant should request an application form from the Montana Department of Transportation (MDT), Fuel Tax Management and Analysis Bureau, and submit the completed application as indicated along with all required attachments. Upon approval, MDT will issue a non-assignable license that continues in force until surrendered or cancelled. Licensed distributors are required to meet monthly reporting requirements as set forth by MDT. The information provided in these reports allows MDT to assess taxes on the fuel distributed and also qualifies the distributor for a tax incentive on each gallon of biofuel produced.

Contact

Montana Department of Transportation, Fuel Tax Management and Analysis Bureau

Registration: Renewable Identification Number Registration and Reporting;

Description

The 2005 Energy Policy Act initiated the Renewable Fuels Standard to mandate new consumption of gasoline and diesel from renewable sources. For purposes of fulfilling the congressional mandate, EPA tracks these gallons of renewable sourced fuels using Renewable Identification Numbers (RINs). Under the EPA's Renewable Fuels Standard (RFS) program, every gallon of renewable fuel produced or imported into the United States must be assigned Renewable Identification Numbers (RINs). RINs are intended to track the amount of renewable fuels actually blended into gasoline or otherwise used as a motor vehicle fuel. Each year, refiners, blenders and importers must acquire sufficient RINs to demonstrate compliance with their volume obligation. For more information, see <http://www.epa.gov/otaq/renewablefuels/420f07041a.pdf>.

Under the regulations, RINs must be generated for a volume of renewable fuel by the time that that volume is transferred to another party (at which time, the RINs are "assigned" to the renewable fuel pursuant to regulation Section 80.1126(e) (2)). Thus the volume measurement used as the basis of RIN generation can occur as the renewable fuel is produced, as it resides in a tank awaiting transfer from the producer/importer, or as it is pumped to a new owner. The method used must be consistent over time for a facility. Considerable federal fines may be levied for noncompliance.

Exceptions:

The recent (January 2010) release of the Renewable Fuels Standard 2 indicates a process may be underway to revise rules and possible exemptions. Please see <http://www.epa.gov/otaq/renewablefuels/index.htm> and <http://www.epa.gov/otaq/renewablefuels/420f09023.htm>

Law

Energy Independence and Security Act of 2007 (EISA), (CFR 40 part 80 — REGULATION OF FUELS AND FUEL ADDITIVE sub-part M, Renewable Fuel Standard, 42 U.S.C. 7414, 7542, 7545, and 7601(a).
<http://www.epa.gov/otaq/renewablefuels/rfs2-regs.pdf> and
<http://www.epa.gov/otaq/renewablefuels/index.htm#regulations>

Procedures: <http://www.epa.gov/otaq/renewablefuels/index.htm>

Contact: EPA and consultant, Lindsay Fitzgerald 202-343-9484

Volumetric ‘Blender’ Tax Registration and Credit

Persons who blend alcohol with gasoline, diesel fuel or kerosene to produce an alcohol fuel mixture outside the bulk transfer/terminal system must pay tax on the volume of alcohol in the mixture when the mixture is sold or removed.

Law and Regulations: 40 CFR Part 80, AMS-FRL-5917-8

See Form 720 at

www.irs.gov/pub/irs-pdf/f720.pdf to report this tax. You must be registered by the IRS as a blender. See Form 637 at www.irs.gov/pub/irs-pdf/f637.pdf Information from the IRS (including Forms 637, 720, 8849, 8864, and 4136).

BIODIESEL

Biodiesel Fuel Registration with the Internal Revenue Service (IRS) Form 637,
<http://www.epa.gov/otaq/regs/fuels/rfgforms.htm>, J. Craig Mazzolini, 406 761-1825.

Biodiesel Fuel Registration for Ultra Low Sulfur Diesel Refinery with EPA, John Weihrauch,
weihrauch.john@epa.gov, forms 3520-20A and 3520-20B1,
<http://www.epa.gov/otaq/regs/fuels/rfgforms.htm>

Commodity Conservation Credit Program License/eligibility
One-Stop Licensing (for retail pumps)

Registration: Renewable Identification Number Registration and Reporting;

Montana law requires a license, a Small Biodiesel Producer License, for biodiesel producers using used fry oil in their production because it is considered resource recovery/recycling (DEQ

Solid Waste Section). In addition, the Montana Public Service Commission (PSC) issues Class D Certificates of Public Convenience and Necessity for motor carriers to transport solid waste, including used cooking oil, for disposal and landfill.

Volumetric 'Blender' Tax Credit information from the IRS (including Forms 637, 720, 8849, 8864, and 4136).

BUILDING, MECHANICAL, ELECTRICAL & PLUMBING

Permit: Building Permit

Description:

The statewide building code applies to all construction throughout the state. A state building permit is required prior to the start of construction for any non-exempt building being built, remodeled, moved, or undergoing a change of occupancy, except for projects located within the jurisdictional limits of a certified local government program. If counties, cities or towns adopt local building codes, enforcement is by local rather than state authorities.

Exceptions:

Residential structures with fewer than five dwelling units; farm and ranch buildings; private garage and storage structures; mine buildings on mine property regulated under state mining laws and subject to inspection under the federal Mine Health and Safety Act; and certain petroleum refineries, pulp and paper mills and industrial process-related structures, vessels and piping. These facilities may require a local permit, however.

Statute: 50-60-101, *et seq.*, MCA

Rule: ARM 24.301.101, *et seq.*

Cost:

State building permit fees are shown below. Local governments that enforce building codes may establish their own fees.

Total Valuation	Fee
\$1 to \$500	\$23.50
\$501 to \$2,000	\$23.50 for the first \$500, plus \$3.05 for each additional \$100, or fraction thereof, to and including \$2,000
\$2,001 to \$25,000	\$69.25 for the first \$2,000 plus \$14 for each additional \$1,000, or fraction thereof, to and including \$25,000
\$25,001 to \$50,000	\$391.75 for the first \$25,000 plus \$10.10 for each additional \$1,000, or fraction thereof, to and including \$50,000
\$50,001 to \$100,000	\$643.75 for the first \$50,000 plus \$7 for each additional \$1,000, or fraction thereof, to and including \$100,000
\$100,001 to \$500,000	\$993.75 for the first \$100,000 plus \$5.60 for each additional \$1,000, or fraction thereof, to an including \$500,000
\$500,001 to \$1,000,000	\$3,233.75 for the first \$500,000 plus \$4.75 for each additional \$1,000, or fraction thereof, to an including \$1,000,000
\$1,000,001 and up	\$5,608.75 for the first \$1,000,000 plus \$3.15 for each additional \$1,000, or fraction thereof

Procedure

A permit must be obtained from the appropriate authorities before construction may begin. For projects requiring a state permit, construction plans and a Building Permit/Plan Review Application must be submitted to the Montana Department of Labor and Industry, Building Standards Division, Building Codes Bureau for review and approval prior to construction.

Contact:

City or Town Council
Board of County Commissioners
Local Building Department
Montana Department of Labor and Industry (MDLI), Building Codes Bureau

Permit: Mechanical Permit

Description

A mechanical permit is required for the design, construction, installation, operation and maintenance of heating, ventilating, cooling or refrigeration systems; incinerators; and other miscellaneous heating appliances. The mechanical permit also specifies the quality of materials and site considerations. If a county, city or town adopts local building codes, then enforcement is by local rather than state authorities.

Exceptions

State permits are not required for: farm and ranch buildings; mining buildings on mining property; petroleum refineries and pulp and paper mills (except offices and shop buildings);

residential buildings containing less than five dwelling units (except when serving transient guests); private garages and private storage buildings used for the owner's own use (not part of a commercial enterprise or business). These facilities may require a local permit, however.

Statute: 50-60-101, *et seq.*, MCA

Rule: ARM 24.301.17, *et seq.*

Cost:

For projects: up to \$10,000, permit cost is \$40 for the first \$1,000 plus \$12 for each additional \$1,000, or fraction thereof

\$10,001 - \$50,000, permit cost is \$148 for the first \$10,000 plus \$7 for each additional \$1,000, or fraction thereof

\$50,001 and up, permit cost is \$428 for the first \$50,000 plus \$4 for each additional \$1,000, or fraction thereof

The above fees are for state permits. Local governments that enforce building codes may establish their own fees.

Procedure

For projects requiring a state permit, a completed permit application, along with any required fees must be submitted to the Department of Labor and Industry (MDLI), Mechanical Safety Section, and approved before any mechanical work may begin. Local jurisdictions may establish their own permitting procedures.

Contact

City or Town Council

Board of County Commissioners

Local Building Department

Montana Department of Labor and Industry (MDLI), Building Codes Bureau or
Mechanical Safety Section

Permit: Electrical Permit

Description

An electrical permit is required for all electrical work performed in Montana. If a county, city, or town adopts local building codes and is certified to issue permits and conduct inspections, then enforcement is by local rather than state authorities.

Exceptions

State permits are not required for: the installation, alteration or repair of electrical signal or communications equipment and traffic signals; street lighting and other electrical traffic control devices owned or operated by a public utility, city or county, or the state; electrical installations on the premises of petroleum refineries; mines and buildings on mine property; and installation, alteration, or repair of low-voltage electrical signal and communications equipment and optical fiber cable. These projects may require a local permit, however.

Statute: 50-60-601, *et seq.*, MCA

Rule: ARM 24.301.431

Cost

For projects: up to \$1,000, permit cost is \$45 for first \$500 plus 6.0 percent of balance of project cost

\$ 1,000 - \$10,000, permit cost is \$75 for first \$1,000 plus 2.0 percent of balance of project cost

\$10,001 - \$50,000, permit cost is \$255 for first \$10,000 plus 0.5 percent of balance of project cost

\$50,001 and up, permit cost is \$455 for first \$ 50,000 plus 0.3 percent of balance of project cost

The above fees are for state permits. Local governments that enforce building codes may establish their own fees.

Procedure

For projects requiring a state permit, a completed permit application, along with the appropriate fees, must be submitted to the Department of Labor and Industry (MDLI), Electrical Safety Section, before any mechanical work begins. The department will issue the electrical permit covering the installation upon receipt of a completed and approved application. Local jurisdictions may establish their own permitting procedures.

A homeowner may wire his/her own home, garage and premises using a state homeowner's electrical permit. All other electrical wiring projects require state electrical permits obtained by Montana licensed electrical contractors and the wiring must be performed by a Montana licensed electrician.

Contact

City or Town Council
Board of County Commissioners
Local Building Department
MT Dept of Labor and Industry (MDLI), Building Codes Bureau or Electrical Safety Section

Permit: Plumbing Permit

Description

A plumbing permit is required for all work performed on plumbing and drainage systems or related parts, except in cities, counties, and towns certified to issue electrical permits and conduct inspections. Local jurisdictions may establish their own permitting procedures.

Exceptions

State permits are not required for: homeowners doing a plumbing installation themselves in a residence that is for the owner's personal use and not built on speculation of resale or intended as a rental property; farms and ranches; mines, mills and smelters; railroads; and public utilities are exempt from state plumbing permit requirements. These facilities may require a local permit, however.

Statue: 50-60-501, *et seq.*, MCA

Rule: ARM 24.301.361

Cost

State fees vary by the type of work being performed, and range from \$2 to \$50. All fees are listed on the permit application. Local governments that enforce building codes may establish their own fees.

Procedure

For projects requiring a state permit, a completed permit application, along with the appropriate fees, must be submitted to the Department of Labor and Industry (MDLI), Plumbing/Mechanical Section, before any mechanical work begins. The department will issue the electrical permit covering the installation upon receipt of a completed and approved application. Local jurisdictions may establish their own permitting procedures. All work performed under the plumbing permit must meet the requirements of the state building code, including the Uniform Plumbing Code.

Contact

City or Town Council
Board of County Commissioners
Local Building Department
Montana Department of Labor and Industry (MDLI), Building Codes Bureau or Plumbing/Mechanical Safety Section

FOREST HARVEST, CLEARING, AND BURNING

Permit: Fire Hazard Reduction

Description

Before conducting any timber cutting or timber stand improvements on private lands or right-of-way clearing on private forest lands, the person conducting the work must obtain an exemption certificate or enter into a fire hazard reduction agreement with the Department of Natural Resources and Conservation (DNRC), except where a minimum slash hazard exists.

Exceptions

Exemption certificates are issued for lands that are within the exterior boundary of an incorporated town and release the applicant from the requirements for slash and hazard reduction.

Statute: 76-13-401, *et seq.*, MCA

Rule: ARM 36.11.221, *et seq.*

Cost

Applicants entering into fire hazard reduction agreements must pay administrative fees and post a bond to cover the potential cost to DNRC in case of default of abatement measures. Costs are determined by DNRC.

Procedure

DNRC must be notified at least 10 days prior to any clearing for right-of-way. The department will issue a certificate of clearance and return the bond when the fire hazard has been appropriately reduced and the agreement for reduction of fire hazard has been executed.

Contact

Department of Natural Resources and Conservation (DNRC), Land and Unit Offices
Forestry Division, Forestry Assistance Bureau

Permit: Timber Sales Permit

Description

Permits for the removal of dead or inferior timber from state forests are required by DNRC or by the board of the county commissioners for county forests. Permits may be issued on state or county forests to use dead or inferior timber for fuel or domestic purposes, without advertising the sale, to Montana citizens for commercial cutting, at commercial rates, in quantities less than 100,000 board feet

Exceptions

In the case of timber salvage emergency due to fire, insect, fungus, parasite or blow-down or to address forest health, permits may be issued to Montana citizens without advertising for less than 500,000 board feet of timber in state or county forests.

Statute: 77-5-201, *et seq.*, MCA

Cost

DNRC will charge full market value for permits. All timber permits require proof of vehicle liability insurance and \$1 million in commercial general liability insurance naming the state of Montana as an additional insured. For sales under 30,000 board feet, a performance bond of \$1,000 is required. For sales of 30,000 board feet or more, the performance bond is 5 percent of the estimated value of the timber sold.

Procedure

To apply for a timber permit, a person must submit a completed application, along with all required attachments, to the DNRC office that is responsible the management of the state land where the proposed sale is located. Applicants also must mark the area of the proposed permit boundary with ribbon, draw or highlight on a USGS map the proposed permit area and roads that would be used to remove the timber, and provide documentation of legal access to tract(s) proposed for timber permit. DNRC will review the application within 30 days. If the project meets all requirements, an appraisal will be completed within 60 days. A permit will be issued within five days after the applicant agrees to terms of sale.

Contact

Department of Natural Resources and Conservation (DNRC), Trust Land Management
Division, Forest Management Bureau
Board of County Commissioners
U.S. Department of the Interior, Bureau of Land Management, Resource Area or Field Office
U.S. Department of Agriculture, Forest Service, Forest Supervisor

LAND USE

Permit: Floodplain and Floodway Permit

Description

Artificial obstructions and nonconforming uses within a designated floodplain or floodway require a permit from the local governing body or from the Department of Natural Resources and Conservation (DNRC) if local authorities have not adopted rules. Local governments may adopt land use regulations, including floodplain management regulations within sheetflood areas, which may restrict development. If local regulations are not adopted, DNRC must adopt and enforce minimum standards.

Exceptions

Open space uses that do not require structures, fill or storage are allowable without permits. Examples include grazing, growing crops, parking and loading areas, and forestry.

Statute: 76-5-401, *et seq.*, MCA (Floodplain and Floodway Management Act)

Rule: ARM 36.15.601, *et seq.*

Cost

Application fees are set by the local governments or by DNRC.

Procedure

Local government or DNRC can be contacted to determine which has jurisdiction over a prospective location. The application for a permit for obstructions or uses in a designated floodplain or floodway must be submitted to the local government or DNRC and must contain maps, plans, profiles and specifications of the obstruction or use of the water course or drainway. Permits for obstructions or uses in a designated floodplain or floodway must be approved or denied within a reasonable period of time, usually 60 days after receipt of an application.

The following criteria must be considered by the local government in evaluating a permit application: danger to life and property by water that may be backed up or diverted by the obstruction or use; danger that the obstruction or use may be swept downstream and cause injury; alternate methods of construction or alteration of obstruction or use which will minimize the danger; the availability of alternate locations; permanence of the obstruction or use; anticipated development in the area; and other factors specified by law.

Contact

City or County Government
Department of Natural Resources and Conservation (DNRC), Water Resources Division,
Water Operations Bureau

Permit: Lakeshore Permit

Description

If a local government has adopted lakeshore protection regulations, a permit is required for any work that will alter or diminish the course, current, or cross-sectional area of a navigable lake or its shore. These activities include construction of channels or ditches; dredging of the lake bottom to remove muck, silt, or weeds; ponding; filling; and constructing breakwaters or wharves and docks.

Exceptions

A permit is not required in areas that have not adopted local regulations, unless adjacent landowners petition DNRC to adopt and enforce regulations.

Statute: 75-7-201, *et seq.*, MCA

Rule: As adopted by local governments

Cost

Permit fees set by local governments must be commensurate with the cost of the permit application. See 75-7-210, MCA, for more information.

Procedure

Contact the local government to see if local regulations have been adopted regarding lakeshore protection, and what the specific permitting procedures are. The local government must seek the recommendations of the local planning board, and may provide a summary procedure to permit work that it finds has a minimal or insignificant impact on a lakeshore. The planning board must report its recommendations to the local government on whether the proposed work conforms to the criteria for issuance of a permit, and it may require the applicant to submit additional information prior to making its recommendations. A variance from local regulations may be obtained if an impact statement is prepared and a public hearing held. Unless the applicant for a lakeshore work permit agrees to an extension, the government must grant or deny the permit within 90 days.

The following are minimum requirements and do not restrict a local government from adopting additional or more stringent regulations that may be authorized by other statutes.

The proposed work will not, during construction or its utilization:

- 1) materially diminish water quality;
- 2) materially diminish habitat for fish or wildlife;
- 3) interfere with navigation or other lawful recreation;
- 4) create a public nuisance; or
- 5) create a visual impact discordant with natural scenic values as determined by the local government when such values form the predominant elements of the landscape.

Contact

Local Government
Department of Natural Resources and Conservation (DNRC), Water Resources Division,
Water Operations Bureau

MAJOR FACILITY SITING

Permit: Certificate of Compliance

Description

A Certificate of Compliance is required from the Department of Environmental Quality (DEQ) for certain major facilities that transmit electricity, transmit fuels and other substances by pipeline, or utilize geothermal resources. Associated facilities such as transportation links and other facilities associated with the delivery of energy are included. Prior to certification, the applicant must receive the necessary permits from DEQ for air emissions; wastewater discharges; the generation, transportation, storage or disposal of hazardous wastes; and other

relevant permits administered by DEQ. Special procedures apply to facilities also subject to the jurisdiction of the Federal Energy Regulatory Commission (FERC).

Exceptions

For qualified biomass projects, certain electric transmission lines (up to 150 miles long) and certain pipelines (up to 150 miles long), where the project sponsors have obtained options or easements from 75 percent of the landowners who collectively own at least 75 percent of the property crossed by the transmission line or pipeline. (MCA 75-20-104(8))

Statute: 75-20-101, *et seq.*, MCA (Montana Major Facility Siting Act, (MFSA))

Rule: ARM 17.20.301, *et seq.*

Cost

The applicant for a certificate under the MFSA is required to deposit a filing fee based on the estimated cost of the project in an earmarked revenue fund for use by DEQ to administer the act. A fee schedule is listed in Statute 75-20-215, MCA.

Procedure

Applications for a certificate under MFSA must be filed with DEQ. The information required varies according to the size and type of the facility, but generally includes a description of the proposed facility and its location, baseline data for the proposed sites and alternate sites.

DEQ must notify an applicant within 30 days that the application is either complete or incomplete. If an application is resubmitted, DEQ has 15 days to advise the applicant that the application is complete and accepted.

Unless a facility is subject to review by a federal land management agency, within nine months following acceptance of an application, DEQ must issue a report that includes: the department's studies; evaluations; recommendations; customer fiscal impact analysis, if required under 69-2-216, MCA; and other relevant documents. An Environmental Impact Statement (EIS) or analysis may be included if there is compelling evidence that the facility construction and operation will have adverse environmental impacts. For a facility that is unlikely to result in adverse environmental impacts, DEQ's decision must be returned in 90 days. Before issuing a decision, DEQ will provide an opportunity for public review and comment.

Linear facilities must be completed within 10 years — except for transmission lines less than 30 miles in length, which must be completed within five years.

Contact

Department of Environmental Quality (DEQ), Permitting and Compliance Division, Environmental Management Bureau.

OCCUPATIONAL SAFETY AND HEALTH

Permit: Boiler Operating Certificate

Description

All boilers must be licensed by Department of Labor and Industry (DLI). All boilers installed and operated in Montana must follow the rules for safe construction, installation, operation, inspection, and repair of equipment as state by DOLI. The definitions and rules follow generally accepted nationwide engineering standards as published by the American Society of Mechanical Engineers (ASME).

Exceptions

Exceptions listed in the rules are: 1) steam heating boilers operated at not over 15 pounds per square inch gauge pressure in private residences or apartments of six or less families or to hot water heating; 2) supply boilers operated at not over 50 pounds per square inch gauge pressure and temperatures not over 250 degrees F when in private residences or apartments of six or less families.

Statute: 50-74-101, *et seq.*, MCA

Cost

None

Procedure

Any person purchasing any boiler that is not exempted must report the purchase within 10 days to DOLI and notify the department as to where the boiler will be installed and operated. DOLI will issue an operating certificate for that boiler, which must be displayed in a conspicuous place in the boiler room.

Contact

Department of Labor & Industry (DLI), Business Standards, Boiler Operator Program

Permit: Boiler Operators License

Description

Persons operating all boilers and steam engines covered by state law are required to hold a proper grade of license. To obtain a license, a person must meet qualifications for licensing as detailed in the law and pass an examination. The six classes of engineers are first-class, second-class, third-class, low-pressure, agricultural, and traction engineers.

Exceptions

- 1) An applicant for an engineer's license in any classification who holds a valid license in that classification from another state having licensing requirements equal to or exceeding

the minimum requirements set out in 50-74-304 MCA, who successfully passes a written examination prescribed by the department, and who is found competent to operate a boiler and steam-driven machinery in that classification by the department must be granted a license in that classification.

- 2) Operating experience in a classification accumulated in the U.S. military services or the merchant marine service satisfactory to the department may be accepted in lieu of the operating experience required for licensing of engineers in each of the license classifications.
- 3) An applicant who has training in the operation of steam or water boilers and steam machinery and who has been certified as having satisfactorily completed a prescribed training course from a department-approved institution or training program in the classification for which the applicant is applying may, pursuant to department rule, be credited with experience toward a first-, second-, or third-class or low-pressure engineer's license.

Statute: 50-74-301, *et seq.*, MCA

Cost

- \$100.00 First-Class License
- \$100.00 Second-Class License
- \$ 80.00 Third-Class License
- \$ 60.00 Low-Pressure License
- \$ 50.00 Agricultural License
- \$ 50.00 Traction License
- \$ 40.00 Renewal Fee

Procedure

An applicant must submit a completed application, pass a written exam, and meet other requirements as stated in the law. Licenses must be renewed annually.

Contact

Department of Labor & Industry (DLI), Business Standards, Boiler Operator Program

Permit: Fire Safety Inspections

Description

Buildings designed for assembly, business, education, or industrial, institutional, or residential occupancy (other than single-family private homes) must meet fire escape, fire alarm, and fire extinguisher requirements. Industrial occupancy includes, but is not limited to, mills, power plants, and processing plants. Local fire authorities may have their own enforcement, may require a permit, or may have adopted a fee schedule.

Exceptions

None

Statute: 50-61-101, *et seq.*, MCA

Rule: ARM 23.7.101, *et seq.*

Cost

The state of Montana does not have a fee, but local fire authorities with their own enforcement programs may require a fee.

Procedure

Contact the local fire authority or the State Fire Marshal to learn who has jurisdiction in your area. Both require compliance with the 2003 Uniform Fire Code and may require inspections. Local fire authorities may require permits or a fee. Fire extinguishers must be checked and maintained at regular intervals.

WASTE MANAGEMENT

Permit: Hazardous Waste Management Facility Permit

Description

A permit from the Montana Department of Environmental Quality (DEQ) is required to construct or operate a hazardous waste management facility for the treatment, storage, or disposal of hazardous wastes. This includes boilers and industrial furnaces that burn hazardous waste or for a hazardous waste incinerator. Permits are issued to ensure hazardous waste facilities are operated in a manner that protects human health and the environment. Permits also require historical releases be cleaned up appropriately. This entails facility soil and groundwater investigations, risk assessments, and review of potential clean-up remedies.

A waste meets the definition of hazardous waste if it is included in an EPA list of specific hazardous wastes; demonstrates any of the characteristics of ignitability, corrosiveness, reactivity or toxicity under standard test procedures; or is a mixture of any waste and one or more listed hazardous wastes. Hazardous wastes may only be transported, stored, treated, disposed of, or used for the purposes of resource conservation or recovery in a manner consistent with state and federal law. Hazardous wastes must be properly contained and labeled. A hazardous waste management facility means all contiguous land, structures, and improvements on the land used for treating, storing, or disposing of hazardous waste.

Exceptions

Conditionally Exempt Small Quantity Generators (CESQGs) are generators that produce less than 220 pounds of non-acute hazardous waste in any calendar month or no more than 2.2 pounds of acute hazardous waste in any month. If a CESQG accumulates more than 2,200 pounds of hazardous waste, all hazardous waste on site becomes subject to regulation as if generated by a small quantity generator. If a CESQG generates more than 2.2 pounds of acute hazardous waste in any month, or accumulates more than 2.2 pounds of acute

hazardous waste at any time, all hazardous waste on site becomes subject to regulation as if generated by a large quantity generator.

A person who is a generator or transporter of hazardous wastes or who owns or operates a hazardous waste management facility may apply to the Board of Environmental Review for a variance or partial variance from the application of or compliance with any requirement of the Montana Hazardous Waste Act or any rule adopted under the act.

Certain wastes are exempt from the regulations of the Montana Hazardous Waste Act. For information on these exempt wastes, contact DEQ.

Statute: 75-10-401, *et seq.*, MCA (Montana Hazardous Waste Act)

Rule: ARM 17.53.101, *et seq.*

Cost

An application fee of \$95 is required for small and large generators of hazardous waste.

Procedure

The permit application for a hazardous waste management facility is divided into two parts, A and B. Part A is a short, standard form requesting information such as the name of the applicant and a description of the activities of the facility. Part B makes up the bulk of the RCRA (federal Resource Conservation and Recovery Act) permit application and requests specific technical information regarding how the facility proposes to meet the relevant regulatory requirements. A permit may be issued for a period specified by DEQ, and is subject to either renewal or revocation, depending on the permit's provisions.

Contact

Department of Environmental Quality (DEQ), Hazardous Waste Program

Permit: Underground Storage Tank Permit

Description

A person may not place a regulated substance in, dispense a regulated substance from, or otherwise operate an underground storage tank (UST) system unless the owner or operator has a valid operating permit and an operating tag for the system. This permit applies to underground storage of biodiesel, by-product glycerol, and alcohol products such as ethanol, methanol, and butanol.

Exceptions

Permits are required only for storage of regulated substances, such as biodiesel blended with petroleum. The Department of Environmental Quality may issue an emergency operating permit to allow operation of a UST without a valid operating permit and tag when operation of the UST is necessary to protect the safety and welfare of persons, property, or national security from imminent harm or threat of harm. Emergency permits expire when the emergency is abated or 90 days after issuance of the permit, whichever occurs first.

Statute: 75.11.201 *et seq.*, 75.11.501 *et seq.*, MCA

Rule: ARM 17.56.101 *et seq.*

Cost

Owners and operators of active UST systems must pay an annual tank registration fee to the DEQ for each tank. The registration fee is \$36 for USTs of 1,100 gallons or less capacity and \$108 for USTs over 1,100 gallons capacity. Above-ground storage tanks (ASTs) with underground piping are subject to the same registration fees based on the AST size. Tank registration fees are handled by Montana's One Stop Licensing program.

Procedure

Permits can be obtained through Montana's One-Stop Licensing program and are issued by DEQ for a term of three years. A permit application must be accompanied by an inspection report from a licensed inspector. Prior to issuing or renewing a permit, DEQ shall determine, on the basis of the inspection report and other relevant information, whether the operation and maintenance of the tank were in compliance with applicable rules on the date of inspection. Active USTs must be inspected at least every three years by a licensed compliance inspector.

Contact

Department of Environmental Quality (DEQ), Underground Storage Tank Program

Permit: Small Biodiesel Production Facility License

Description

An annual license may be required for small biodiesel production facilities (less than 2,500 gallons per year) if used fryer oil is used in the production process since the use of used oil is considered recycling and resource recovery. Biodiesel producers who acquire used fryer oil but do not pay the generator for the oil are required to obtain a biodiesel production license.

Exceptions

Biodiesel producers who acquire used fryer oil and pay the generator for the oil are not required to obtain a biodiesel production license.

Rule: ARM 17.50.404

Cost

None

Procedure

Small biodiesel producers who acquire used fryer oil but do not pay the generator for that oil must submit an application for a license to the Department of Environmental Quality (DEQ) Solid Waste Section. The application requires information including facility license number, name, and location; type and amount of feedstocks accepted; and type and volume of materials produced.

Contact

Department of Environmental Quality (DEQ), Solid Waste Section

Permit: Solid Waste Management System License

Description

An annual license is required from the Department of Environmental Quality (DEQ) for the management of solid waste and for the operation of a solid waste management system. Sites are approved and licensed by DEQ and validated by local health officials. *Solid waste* means all putrescible and nonputrescible wastes, including but not limited to: garbage, rubbish, refuse, ashes, sludge from sewage treatment plants, water supply treatment plants or air pollution control facilities; construction and demolition wastes; dead animals; discarded home and industrial appliances; and wood products or byproducts and inert materials. Solid waste does not mean municipal sewage, industrial wastewater effluents, mining wastes, slash, or forest debris regulated by the DEQ or marketable wood byproducts.

Exceptions

In certain circumstances, the on-site disposal of solid wastes from a person’s household or farm and certain categories of on-site industrial waste disposal operations are excluded from this licensing requirement.

Statute: 75-10-201, *et seq.*, MCA (Solid Waste Management Act)

Rule: ARM 17.50.501, *et seq.*

Cost

Facility	Initial Application Review Fee	Annual License Fees	Tonnage Fee
Major Class II facility	\$ 12,000	\$ 4,200	\$0.40
Intermediate Class II facility	9,000	3,600	\$0.40
Minor Class II facility	6,000	3,000	\$0.40
Major Class III facility	3,600	1,200	\$0.40
Minor Class III facility	2,400	600	\$0.40
Major Class IV facility	3,600	1,200	\$0.40
Minor Class IV facility	2,400	600	\$0.40
Major incinerator	12,000	4,200	\$0.40
Intermediate incinerator	9,000	3,600	\$0.40
Minor incinerator	600	3,000	\$0.40
Major landfarm facility	3,600	1,800	\$0.40
Intermediate landfarm facility	2,400	1,200	\$0.40
landfarm facility	1,200	600	\$0.40
One-time landfarm	200-500	0	\$0.00

Transfer station ($\geq 10,000$ tons/yr)	8,400	1,260	\$0.00
Transfer station ($< 10,000$ tons/yr)	4,800	480	\$0.00
Large composter operation	3,600	1,800	\$0.00
Small composter operation	0	0	\$0.00

A solid waste management system will require an initial application review fee, and then a subsequent annual license fee and tonnage fee, as shown below.

Procedure

A person applying for a license to operate a solid waste management system must submit a license application to DEQ on forms furnished by the department. The application must include the applicant's name and business address, the location of the proposed facility, the plan of operation, and other information as requested. DEQ will notify the applicant if additional information is required, and will postpone processing the application. The department must notify the local health officer where the proposed facility will be located within 15 days of receipt of a completed application. An Environmental Assessment (EA) is conducted during the solid waste application review process. If indicated by the EA, an Environmental Impact Statement (EIS) may be required.

DEQ must publish the proposed decision in local newspapers and by electronic means, allowing the public 30 days to submit written comments. After the 30-day comment period, DEQ will notify the local health officer of the final decision. The local health officer then has 15 days to validate or refuse the decision. If either DEQ or the local health officer denies the application for a license, the applicant has 30 days to appeal the decision.

Contact

Department of Environmental Quality (DEQ), Permitting and Compliance Division,
Waste and Underground Tank Management Bureau, Solid Waste Section

WATER QUALITY

Permit: Montana Groundwater Pollution Control System (MGWPCS) Permit

Description

Any person or facility that will potentially discharge pollutants into state ground waters must obtain an MGWPCS permit, Water Protection Bureau, Permitting and Compliance Division, DEQ. Ground water classifications are established to protect water for beneficial uses. DEQ has a policy of not allowing degradation of ground water. High-quality ground water must be maintained at that quality unless it has been positively demonstrated that a change is justifiable for necessary economic or social development and will not preclude present or anticipated uses of such water.

Exceptions

A permit is not required for the discharge of certain wastes under specific circumstances, including, but not limited to: solid waste management systems and hazardous waste management systems licensed by DEQ; individuals disposing of their own normal household wastes on their own property; discharges or activities regulated under the federal

underground injection control program; agricultural irrigation facilities; and projects reviewed under the provisions of the Montana Major Facility Siting Act, Title 75, chapter 20.

Statute: 75-5-101, *et seq.*, MCA (Montana Water Quality Act)

Rule: ARM 17.30.1001, *et seq.*

Cost

DEQ assesses fees to cover a portion of the costs of implementing the water quality program. A full schedule of fees is listed in ARM 17.30.201.

Procedure

An application for an MGWPCS permit must be submitted to DEQ on appropriate forms at least 180 days prior to beginning operation. The application must include: a site map that extends to at least one mile beyond property boundaries and shows the outline of the facility; the location of each of its existing and proposed intake and discharge structures (outfalls); each of its hazardous waste treatment, storage or disposal facilities; each well where it injects fluids underground; and all springs, rivers and other surface water bodies in the map area. Additionally, the application must include a description of waste or process solutions, information on existing ground water quality, and any additional information required by DEQ.

Once the application is received, DEQ must make a tentative determination with respect to issuance of a MGWPCS permit. DEQ is then required to issue a public notice to inform interested persons of the proposed discharge and of the tentative determination. At least 30 days are provided for written comments from the public regarding the application. Public hearings may be held on DEQ's own initiative or at the request of another agency or interested person. DEQ has 60 days to review new permit applications for completeness and 30 days for completeness review of deficiency responses. During the processing of applications, DEQ also determines discharge limits and the length of mixing zones to ensure water quality standards are met. If DEQ denies the discharge permit, the applicant may appeal the decision to the Board of Environmental Review. The hearing must be held within 30 days of the receipt of the written request.

All MGWPCS permits are issued for a fixed term, not to exceed 10 years.

Contact

Department of Environmental Quality (DEQ), Permitting and Compliance Division,
Water Protection Bureau

Permit: Montana Pollutant Discharge Elimination System (MPDES) Permit

Description

An MPDES permit from the Department of Environmental Quality is required to construct, modify, or operate a disposal system or to construct or use any outlet for discharge of sewage, industrial or other wastes into state surface or ground water. The MPDES permit regulates the discharges of pollutants from point sources into state waters. A point source can

be any discernible conveyance, such as a pipe, a ditch, or a floating craft, from which pollutants are discharged. An animal confinement facility also may be a point source.

All discharges of pollutants into state waters authorized by a MPDES permit must be consistent with the conditions of the permit. If there is a violation of the permit, DEQ may modify, suspend, or revoke the permit. DEQ has a nondegradation policy that requires that any state water of a quality higher than the established water quality standards be maintained at that higher quality. Common pollutants that are limited under the nondegradation policy include nutrients, heavy metals, and toxic organic pollutants. Permits may require effluent limitations or other conditions on industrial, public, or private projects or developments that constitute a new or an increased source of pollution to high-quality waters.

Exceptions

Federal permitting authority is involved for activities on Indian Reservations. For more information, see the discussion on the National Pollutant Discharge Elimination System (NPDES) permit later in this section.

In addition, DEQ may authorize short-term turbidity standards for construction projects that affect water bodies (318 standards). DEQ also may authorize short-term exemptions from the water quality standards (308 exemptions) for the purposes of emergency remediation that has been approved, authorized, or required by DEQ and application of an EPA-registered pesticide when it is used to control nuisance aquatic organisms or to eliminate undesirable and non-native aquatic species. DEQ must issue the authorization before activity begins.

Statute: 75-5-101, *et seq.*, MCA (Montana Water Quality Act)

Rule: ARM 17.30.1301, *et seq.*

Cost

DEQ assesses fees to cover a portion of the costs of implementing the water quality program. A full schedule of fees is listed in ARM 17.30.201.

Procedure

MPDES Permits — General: DEQ may issue a general MPDES permit to cover all facilities that engage in a general type of activity in a discrete geographical region, or statewide. These categories include, among others, storm water point sources, suction dredge mining operations, and construction dewatering operations. Applications must be submitted 30 days before the initiation of a proposed discharge.

Within 30 days of receiving a completed application, DEQ will issue an authorization to operate under a general MPDES permit, or notify the applicant that the source does not qualify, citing the reasons. The public must be given notice and a 30-day comment period allowed if the source cannot qualify to operate under a general MPDES permit. If an authorization to operate under a general MPDES permit is denied, DEQ will process the application as an individual MPDES permit, unless the application is withdrawn.

MPDES Permits — Individual: Individual MPDES permits are required for facility-specific industrial, commercial, or municipal discharges. An application must be filed at least 180

days prior to the operation of a point source. Application information must include plans and specifications, site plans, descriptions of adjacent state waters, soil conditions, ground water characteristics, process and waste flow diagrams and the volume and nature of projected discharges. Storm water discharges may be incorporated into this application, permitted under a separate individual MPDES permit or permitted under a general MPDES permit.

Once an application is received, DEQ will either tentatively issue or deny an MPDES permit. DEQ is then required to issue a public notice to inform interested persons of the proposed discharge and of the tentative determination. At least 30 days are provided for written comments from the public regarding the application. Public hearings may be held on DEQ's own initiative or at the request of another agency or interested person. DEQ has 60 days to review new permit applications for completeness and 30 days for completeness review of deficiency responses. During the processing of applications, DEQ also determines discharge limits and the length of mixing zones to ensure water quality standards are met. Hearings must be held in the geographical area of the proposed discharge. If DEQ denies the discharge permit, the applicant may appeal the decision to the Board of Environmental Review (BER). The hearing must be held within 30 days of the receipt of the written request. All MPDES permits are issued for a fixed term, not to exceed five years.

Contact

Department of Environmental Quality (DEQ), Permitting and Compliance Division,
Water Protection Bureau

Permit: General Permit for Storm Water Discharges Associated with Construction Activity

Description

Construction activity which results in the “disturbance” of equal to or greater than one acre of total land area will need to obtain permit coverage under the General Permit for Storm Water Discharges Associated with Construction Activity (called “General Permit”). Construction activity includes the disturbance of less than one acre of total land area that is part of a “larger common plan of development or sale” if the larger common plan will ultimately disturb one acre or more (such as projects with phased work over years). “Disturbance” related to construction activity means areas that are subject to clearing, excavating, grading, stockpiling earth materials, and placement/removal of earth material performed during construction projects.

Law: 75-5-101, *et seq.*, MCA (Montana Water Quality Act)

Rule: ARM 17.30.1001, *et seq.*

Cost

Fees based on the number of discharges are determined by multiplying the appropriate fee by the number of named or perennial surface waters (as shown on a USGS topographic map) which could receive storm water runoff from the construction activity site.

The Notice of Intent (application) fee amount per discharge for storm water associated with construction activity is \$450.00 for commercial or public projects. The annual fee amount per discharge is \$450 (per calendar year) for commercial or public projects. Fee amounts are specified as of April 2007. Actual fee amounts are subject to change.

Procedure

To obtain permit coverage, an owner or operator must submit to DEQ's Water Protection Bureau the following Notice of Intent (NOI) package items by the proposed construction start date:

- NOI form with all requested items completed;
- Storm Water Pollution Prevention Plan (SWPPP) addressing all requested items in the General Permit;
- Application fee and first year annual fee based on the number of discharges and type of construction project.

The permittee must submit a Notice of Termination (NOT) form when the construction activity is complete and the site has achieved "final stabilization." Final stabilization means the time at which all soil-disturbing activities at a site have been completed and a vegetative cover has been established with a density of at least 70 percent of the pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed. Final stabilization using vegetation must be accomplished using seeding mixtures or forbs, grasses and shrubs that are adapted to the conditions of the site. Establishment of a vegetative cover capable of providing erosion control equivalent to pre-existing conditions at the site will be considered final stabilization. All applicable fees must be paid before permit coverage can be terminated.

Contact

Department of Environmental Quality (DEQ), Permitting and Compliance Division,
Water Protection Bureau

Permit: National Pollutant Discharge Elimination System (NPDES) Permit

Description

The NPDES permit protects surface water and groundwater from pollution and controls the treatment and discharge of municipal and industrial wastewater. Any person or facility planning to discharge wastewater on Indian Reservations must obtain an NPDES permit and comply with minimum discharge limits established by the Environmental Protection Agency (EPA). A permit also is required to modify or expand a project.

Exceptions

Activities in incorporated municipalities on Indian reservations are excluded from this permitting requirement, although the municipality may have its own permitting or other requirements.

Law: Water Pollution Control Act, 33 USC 1251, *et seq.*

Rule: 40 CFR 122, *et seq.*

Procedure

An application must be submitted to EPA on forms provided by that agency. When a completed application has been received, EPA drafts either a permit or a denial and publishes the notice of intent to issue or deny. Following a 20-day comment period, EPA must issue a denial or approval. The EPA may include effluent limitations and monitoring and reporting requirements as conditions of the permit. A permit is issued for a fixed term up to five years. An applicant must apply for renewal of the permit 180 days before its expiration date.

Contact

EPA Region 8, Montana Operations Office, listed in Appendix B

Permit: Stream Protection Act Permit

Description

A state or federal agency, county or city government or other political subdivision, with the exception of irrigation districts, must apply for a Stream Protection Act (also called a 124) permit from the Montana Department of Fish, Wildlife & Parks (DFWP) before beginning a project that may alter the bed or banks of any stream or river in Montana.

Exceptions

A 124 permit is not required from public agencies for situations requiring emergency response such as ice jams, floods, etc. An emergency is defined as an imminent threat to life or property that could not be foreseen.

Statute: 87-5-501, *et seq.*, MCA

Rule: None

Cost

None

Procedure

An agency planning a project must submit a Notice of Construction application to DFWP at least 60 days before the anticipated date of construction. Within 30 days after the department receives project plans, it must notify the applicant whether or not the project will adversely affect fish or wildlife habitat. FWP may require modifications to the project and make recommendations for alternate plans. If required, recommended construction conditions are outlined in the permit issued to the applicant. If the applicant refuses to modify the plans as outlined in the permit, and an agreement cannot be reached, an arbitration panel may be appointed by the District Court.

Contact

Department of Fish, Wildlife & Parks (DFWP), Fisheries Division

Permit: Stream Bed and Land Preservation Permit

Description

A private, nongovernmental individual or entity proposing to work in or near a stream on public or private land must apply for a 310 permit from the conservation district's board of supervisors. Types of activities that may require a permit include: engineering operations for dams, dikes, ponds, ditches, fences and other construction; stream crossings; bank stabilization projects; irrigation diversions, head-gates and pump site maintenance; and other activities that alter the condition of a stream or river.

Exceptions

No prior notice or approval is necessary for emergency actions taken to safeguard life or property. However, notice must be given to the supervisors or commissioners within 15 days following the emergency action. A team will be called together to evaluate the project.

Statute: 75-7-101, *et seq.*, MCA (Natural Streambed and Land Preservation Act)

Rule: ARM 36.2.401, *et seq.*

Cost

None

Procedure

An individual planning a project must obtain a permit application prior to any activity in or near a stream. Applications are available at the Conservation District offices or from the Department of Natural Resources & Conservation (DNRC). If a permit is required, a team composed of a district supervisor, a DFWP biologist, and the applicant conducts a site inspection. The supervisors have 60 days from the date of application to approve, modify, or deny the permit.

Contact

Conservation District
Grass Conservation District
Board of County Commissioners
Department of Natural Resources and Conservation (DNRC), Conservation and Resource Development Division, Conservation Districts Bureau

Permit: Beneficial Water Use Permit

Description

The Montana Water Use Act of 1973 established a permit system for new uses of water. Montana waters may be appropriated only for beneficial uses. Beneficial uses include agricultural, domestic, municipal, power and recreational. A Beneficial Water Use Permit is required for all projects that propose the use of un-appropriated water. In addition, any changes in an existing water use permit must be approved by the Department of Natural Resources and Conservation (DNRC).

Exceptions

A permit to appropriate water is not required for construction of a pit or reservoir for use by livestock if: 1) the pit or reservoir has a maximum capacity of less than 15 acre-feet of water; 2) the impoundment is constructed on and will be accessible to a parcel of land that is owned or controlled by the applicant and that is at least 40 acres in size; and 3) the appropriation is less than 30 acre-feet per year and is from a nonperennial flowing stream. However, an application for a provisional permit for a completed stock water pit or reservoir must be submitted to the Department of Natural Resources and Conservation (DNRC) within 60 days after construction of the pit or reservoir. If the pit or reservoir adversely affects prior water rights, then DNRC may modify or revoke the permit.

Statute: 85-2-301, *et seq.*, and 85-2-402, *et seq.*, MCA

Rule: ARM 36.12.101-36.12.106 and 36.16.103-36.12.106

Cost

Fees vary according to the type of application and are due at the time the application is submitted. For a schedule of fees see ARM 36.12.103 or contact DNRC.

Procedure

A permit to appropriate water for a beneficial use is required from DNRC before beginning a project that proposes the use of un-appropriated water. Application forms are available from the DNRC Water Rights Bureau Office in Helena and the eight local Water Resources Regional Offices. The DNRC has 180 days to notify the applicant of any defects in an application. An incorrect or incomplete application does not lose its filing priority if it is corrected and re-filed within 30 days or as DNRC allows, up to three months. An application not corrected within three months is by law terminated.

The application process for a permit or change approval may take one year or longer. DNRC will prepare a notice on the application that must be published one time in an area newspaper.

To apply for a water reservation, the state or a political subdivision or the federal government must submit an application to DNRC. Individuals may not make this application. Applications are processed and investigated by the department. DNRC must make findings concerning the purpose and need for the water reservation, the amount of water necessary and whether the proposed use is in the public interest.

Contact

Department of Natural Resources and Conservation (DNRC), Water Resources Division,
Water Rights Bureau Office

Local Water Resources Regional Offices

OTHER

Permit: Small Biodiesel Production Facility License

Description

An annual license may be required for small biodiesel production facilities (less than 2,500 gallons per year) if used fryer oil is used in the production process since the use of used oil is considered recycling and resource recovery. Biodiesel producers who acquire used fryer oil but do not pay the generator for the oil are required to obtain a biodiesel production license.

Exceptions

Biodiesel producers who acquire used fryer oil and pay the generator for the oil are not required to obtain a biodiesel production license.

Rule: ARM 17.50.404

Cost

None

Procedure

Small biodiesel producers who acquire used fryer oil but do not pay the generator for that oil must submit an application for a license to the Department of Environmental Quality (DEQ) Solid Waste Section. The application requires information including facility license number, name and location; type and amount of feedstocks accepted; and type and volume of materials produced.

Contact

Department of Environmental Quality (DEQ), Solid Waste Section

Permit: EPA Biodiesel Fuel Registration

Description

Producers of biodiesel for highway or off-road use are considered manufacturers of motor vehicle fuel or fuel additive. Each manufacturer or importer of motor vehicle diesel fuel, and their additives, is required to have the product registered by the Environmental Protection Agency (EPA) prior to its introduction into commerce. Registration involves providing a chemical description of the product, a chemical analysis from a certified laboratory showing the fuel meets ASTM D6751 specifications, as well as certain technical, marketing, and health-effects information. This allows EPA to identify the likely combustion and

evaporative emissions. In many cases, health-effects testing are required for a product to maintain its registration or before a new product can be registered.

In addition, biodiesel producers are required to register with EPA as a refiner. This applies to both highway and non-road biodiesel.

Exceptions

None

Statute: 40 CFR Part 79, 40 CFR Part 80

Cost: ASTM results and certification for US EPA Tier I and II Health and Safety test results (see below)

Procedure

As part of EPA's registration process for fuel manufacturers, biodiesel producers must complete and submit EPA registration form 3520-12 (Fuel Manufacturer Notification for Motor Vehicle Fuel, available at <http://www.epa.gov/otaq/regs/fuels/ffarsfrms.htm>), and also provide the following information:

1. The feedstocks used to produce biodiesel.
2. A description of the manufacturing process used to produce biodiesel.
3. Emissions and health effects testing on the manufacturer's biodiesel, or alternatively, proof of registration with the National Biodiesel Board (NBB) showing access to the EPA Tier I and Tier II emissions and health effects testing data.
4. Test results from a representative sample of the manufacturer's biodiesel demonstrating compliance with the parameters specified in ASTM D 6751.

Under 40 CFR Part 80, diesel fuel producers must complete and submit EPA registration forms 3520-20A (Fuels Programs Company/Entity Registration) and 3520-20B1 (Diesel Programs Facility Registration). Both of these forms are available at <http://www.epa.gov/otaq/regs/fuels/rfgforms.htm>.

Contact: EPA Office of Transportation and Air Quality

License: Food Manufacturing License

Under MCA 50-57, any wholesale food operation will need a license for such items as food-grade distiller's grains, food grade oilseed meal or oil and other products. The Montana Department of Health and Human Services (DPHHS) Food, Drugs, and Cosmetics Bureau would be contacted first. They notify the applicable local health department for requirements and offer a single food manufacturing license. A product must have approved labeling before marketing. The Montana Department of Agriculture Fertilizer / Feed Program Inspector are Andy Gray, 406-444-0512.

Exceptions: None

Statute: MCA 50-57 and MCA 80-10-101

Cost: (Fertilizer Tonnage Assessment fee due quarterly with report, effective July 1, 2009)

Commercial Fertilizer:	\$1.00/ton
Soil Amendments	\$0.10/ton (if reporting more than 50 tons per quarter)
Specialty Fertilizer	none

Annual Product Registration Fees:

\$45.00/product — Specialty Fertilizer
\$30.00/product — Commercial Fertilizer
\$20.00/product — Soil Amendments

Fertilizer Dealer

Annual Dealer License Fees:

\$75.00 — Application for licensing a new location
\$50.00 — Renewal application received before January 1st
\$75.00 — Renewal Application received after January 1st

Permit: Testing Exemption for Non-Certified Alternative Fuels

Description:

Small producers of alternative fuels not yet certified for use by the Environmental Protection Agency (EPA) under the Clean Air Act, including straight vegetable oil and used cooking oil, as well as any vehicle modification for use of any of these fuels, must apply for a Testing Exemption from EPA before beginning the modification.

Exceptions: None

Statute: 40 CFR 85.1701

Cost: None

Procedure

Any person requesting a testing exemption pursuant to these regulations must submit a letter to EPA which provides the following information:

- 1) A concise statement of purpose which shows that the proposed test program has an appropriate basis; research, investigations, studies, demonstrations or training.
- 2) That the proposed test program necessitates the granting of an exemption. That is, that the stated purpose cannot be achieved without performing or causing to be performed one or more of the prohibited acts under section 203(a) of the Act.
- 3) That the proposed test program exhibits reasonableness in its scope. The program must have duration of reasonable length and affect a reasonable number of vehicles or engines. Required

items of information include: a) an estimate of the program duration; b) the number of vehicles or engines involved; and c) year and gross vehicle weight rating of each vehicle or engine.

4) That the proposed test program exhibits a degree of control consistent with the purpose of the program and EPA's monitoring requirements. As a minimum, required items of information include: a) the technical nature of the test; b) the site of the test; c) the time or mileage duration of the test; d) the ownership arrangement with regard to the vehicles or engines involved in the test; e) the intended final disposition of the vehicles or engines; f) the manner in which vehicle identification numbers or the engine serial numbers will be identified, recorded, and made available; and g) the means or procedure whereby test results will be recorded.

If upon review, EPA decides that the granting of an exemption is appropriate, then a memorandum of exemption will be sent to the applicant. The memo will set for the basis for the exemption, its scope, and such terms and conditions are deemed necessary.

Contact: EPA, Compliance and Innovative Strategies Division, Ann Arbor, MI

Permit: Weighing or Measuring Device License

Description

Any person using a commercial weighing or measuring device must purchase an annual license from the Bureau of Building and Measurement Standards. Measuring device fees are per meter, not number of hoses, nozzles, or cabinets. Measuring devices include gasoline, diesel, compressed natural gas and fuel oil dispensers or meters.

Exceptions:

Scales or measuring devices used in the manufacturing process

Statue: 30-12-101, *et seq.*

Rule: 24.351.201

Cost:

<u>Manufacturer's rated capacity</u>	<u>Cost per device</u>
Less than 20 gallons per minute	\$ 21.00
21-130 gallons per minute	70.00
Greater than 130 gallons per minute	83.00

Procedure

Licenses can be obtained through Montana's One-Stop Licensing program by submitting an application and all applicable fees.

Contact

Department of Labor and Industry (DLI), Business Standards Division, Weights and Measures Bureau

Permit: One-Stop Business Licensing

Description

At the 1997 legislative session, Montana lawmakers enacted House Bill 391 to begin what is known as the “One-Stop Business Licensing” project. The law enables a business to obtain or renew most, if not all, of the licenses, fees and permits required by state government from one centralized location.

Contact: Correspondence, completed application forms and payment should be directed to One-Stop Licensing, c/o Montana Department of Revenue, P.O. Box 8003, Helena, MT 59604.
<http://onestoplicensing.mt.gov/> 406-444-6900.

Procedure: Select license packages can be obtained from the Department of Revenue (DOR). Some of these will contain all the forms for Underground Storage Tanks, Petroleum Dealers License (Meters) and Weighing Device License (Scales).

Cost: Varies by License

Late Fees and Penalties: Several of the licenses, fees and permits included in One-Stop Licensing have a late fee or penalty. The late fees and penalties are as follows:

License,	Fee or Permit	Late Fee or Penalty
Food Purveyor	\$25	

Note: Weighing and Measuring Devices may be removed from service for continued non-payment.

Meters - Petroleum Dealers 50% 60 days after the due date

Scales - Weighing Devices

Standard 50% 60 days after the due date

On Farm 50% Calendar year license term - penalty due after July 1st

SECTION 5: Special Considerations

Business Licensing Requirements

A bioenergy project must comply with a wide variety of laws and rules and must obtain a number of permits and licenses to do business in Montana. A business owner must file with the Secretary of State for any of the following that are applicable to a business: a certificate of partnership, articles of incorporation, registration of an assumed business name or registration of a trademark. Other business responsibilities may include obtaining a local business license, obtaining a federal tax identification number, registering with the Montana Department of Revenue as an employer for income tax purposes, filing a state withholding tax registration, registering for unemployment insurance, or obtaining Workers Compensation insurance.

The State of Montana does not require that all businesses hold a general business license. However, there are certain types of businesses that are required to register and be licensed by the state. The Department of Commerce Small Business Development Center's *Business License Guide* provides a brief summary of licensing or registering a business. The Guide is available online at <http://sbdc.mt.gov/License.asp>.

Some city/county governments also may require a local business license. Check with your local government offices.

Combined Heat and Power and Small Power Production

A combined heat and power or small power production facility must be certified as a qualifying facility (QF) in order to sell the electricity it generates to a utility. A QF must meet certain requirements as stated in Montana law MCA 69-3-601. Those requirements state that the facility must: 1) produce electricity as a primary energy source from biomass, waste, water, wind, or other renewable resource or any combination of these resources; or 2) produce electricity and useful forms of thermal energy, such as heat or steam, used for industrial, commercial, heating or cooling purposes through the sequential use of energy known as cogeneration; and 3) have a power production capacity that together with any other facilities located at the same site is not greater than 80 megawatts; and 4) is owned by a person not primarily engaged in the generation or sale of electricity other than electric power from a small power production facility.

The Federal Energy Regulatory Commission (FERC) is responsible for certifying QFs. An owner or operator of a generating facility may obtain QF status by either submitting a self-certification or applying for and obtaining a FERC certification of QF status. The choice of whether to certify a facility through self-certification or Commission certification is up to the applicant. In some instances, negotiations with a lender or utility purchaser may proceed more smoothly if the facility has been certified by the Commission.

Facilities that are connecting to an existing utility grid can get guidelines from that utility. Facilities also must comply with state electrical standards, apply for an electrical permit, and be inspected by state inspectors prior to initiating service.

The Montana Public Service Commission (PSC) determines the rates and conditions of contract for electricity between a QF and a utility. Rates may be based on the avoided cost over the term of the contract, the cost of production for the qualifying small power production facility plus a just and reasonable return or any other method that will promote the development of qualifying small power production facilities.

Utilities owned or controlled by a municipality, county or city-county water or sewer district are excluded from PSC jurisdiction. Rates and services for such systems are determined by the local governing body or district.

Facilities located in a district served by a private company or an electric cooperative negotiate rates and contracts directly with that cooperative. More information on electric cooperatives in Montana is available from the Montana Electric Cooperative Association.

Cogeneration or small power production plants, whether a QF or not, may be liable to pay the Electrical Energy Producers Tax, a quarterly tax imposed on any business engaged in the generation of electrical energy. The tax is \$.0002 per kilowatt-hour of electrical energy generated, manufactured or produced and is payable to the Montana Department of Revenue (DOR).

Dam Safety

The Montana Dam Safety Act (MCA 85-15-105, *et seq.*) requires construction and operating permits for high-hazard dams. A high-hazard dam is a dam or reservoir with an impounding capacity of 50 acre-feet or more at the maximum normal operating pool, the failure of which would be likely to cause loss of life. The Department of Natural Resources and Conservation (DNRC) Water Resources Division administers the Dam Safety Program; issues permits; establishes safety standards for the design, construction, operation, and maintenance of high-hazard dams; conducts periodic inspections; and establishes fees commensurate with inspection costs.

Forested Areas

Requirements regarding harvesting of timber and removal of slash and wood waste for commercial uses vary depending on land ownership. Boards of county commissioners; Montana Department of Natural Resources and Conservation, Forest Management Bureau; U.S. Forest Service; U.S. Bureau of Land Management; U.S. Fish and Wildlife Service; and the National Park Service all administer forest lands in Montana.

A permit is required from DNRC for slash disposal on private or state lands. A permit also is required from DNRC for timber cutting or timber stand improvement on state lands, and for right-of-way clearing by public or private utilities. Permits may be issued to county residents to use dead or inferior timber for fuel or domestic purposes. Permits may be issued to Montana citizens for commercial purposes at commercial rates without advertising for timber in state forests in quantities of less than 100,000 board feet or in emergency situations due to fire, insects, or blow down. (see Forest Harvest, Clearing, and Burning)

Timber sales on federal lands administered by Bureau of Land Management (BLM) and the Forest Service are advertised for competitive bids. BLM may negotiate individually with purchasers for small amounts of timber in special instances.

Highways/Transportation

The Montana Department of Transportation (MDT) regulates various aspects and transportation and activities adjacent to highways. Permits are required for: special fuels; restricted routes or loads; companies that operate commercial motor vehicles in interstate or international commerce; highway right-of-way, encroachments, and approaches; utility mains; outdoor advertising visible from and oversized vehicles and loads.

MDT's Motor Carrier Services (MCS) division is responsible for the State of Montana's oversize/overweight permit program, as well as issuing special fuel use license, motor carrier permits, and assessing gross vehicle weight fees. In addition, it manages Montana's automated web-based permitting system, available online at <https://app.mt.gov/ipermits/why.html>.

MDT's Highways and Engineering Division regulates activity related to highway construction, including encroachments, right-of-ways, driveways and other approaches intersecting public streets and highways; and utility mains and lines along state highways. Permits are required for much of this activity.

In addition, city councils and county commissioners grant approval for projects that affect city streets and county roads.

MDT controls and limits signs along the interstate and primary highways to allow the traveling public to enjoy Montana's scenic beauty. Outdoor advertising is controlled through a sign permit system. These permits require an initial fee, as well as renewal fees where applicable. Application forms and fee schedules are available from the Right-of-Way Section Outdoor Advertising Control contacts, listed in Appendix B.

All hazardous waste transporters who maintain depots, terminals, offices or transfer facilities in Montana must register with the Department of Environmental Quality (DEQ) and obtain an identification number. There is no fee for registration, and registration renewal is accomplished every three years. This transporter registration requirement does not apply to out-of-state transporters who merely pass through Montana or who only pick up or deliver wastes at locations in Montana without having any terminals, depots, offices, or transfer facilities in the state. The registration forms are available from DEQ, Hazardous Waste Program.

The federal Unified Carrier Registration Program requires individuals and companies that operate commercial motor vehicles in interstate or international commerce to register their business with Montana and pay an annual fee based on the size of their fleet. Registration can be completed online at the program website, <http://www.ucr.in.gov/>.

In addition, companies that operate commercial vehicles hauling cargo in interstate commerce must be registered with the Federal Motor Carrier Safety Administration and must have a USDOT Number. Also, commercial intrastate hazardous materials carriers who haul quantities requiring a safety permit must register for a USDOT Number. The USDOT Number serves as a

unique identifier when collecting and monitoring a company's safety information acquired during audits, compliance reviews, crash investigations, and inspections.

Several states, including Montana, require all registrants of commercial motor vehicles, even intrastate and non-Motor Carrier registrants, to obtain a USDOT Number as a necessary condition for commercial vehicle registration. Information and forms for obtaining a USDOT Number can be found at <http://www.fmcsa.dot.gov/registration-licensing/registration-licensing.htm>.

Indian Reservations

The seven Indian Reservations in Montana fall under the jurisdiction of the Environmental Protection Agency (EPA) in regard to air quality, water quality and hazardous waste management. Projects that fall into these categories must follow EPA guidelines, regulations and permitting requirements. More information is available from the EPA Region 8 Montana Operations Office, listed in Appendix B.

The Northern Cheyenne Indian Reservation, the Flathead Indian Reservation, and the Fort Peck Indian Reservation are designated as Class I for air quality purposes. All other reservations in the state are designated Class II. Because some projects conducted outside the boundaries of a reservation still affect areas in or adjacent to reservation lands, EPA is sometimes asked to enter into cooperative pollution management programs with the state, tribes and/or the U.S. Department of the Interior, Bureau of Indian Affairs.

The EPA also administers programs to control water pollution and provide safe drinking water. The National Pollution Discharge Elimination System (NPDES) permit protects surface water and ground water from pollution and controls the treatment and discharge of municipal and industrial wastewater. Minimum discharge limits are established by EPA and apply to all discharges except where more intensive treatment is necessary in order to meet water quality standards.

EPA has statutory authority to regulate hazardous waste on Indian reservations and requires hazardous waste producers to comply with detailed record-keeping and reporting requirements.

The seven Indian agencies in Montana and their corresponding tribes are listed in Appendix B.

Local Areas

Local agencies, the board of county commissioners, or the city or local government may have laws or regulations that can affect a bioenergy project. Local governments often have jurisdiction over building and construction, land use, utilities, roads and some environmental concerns such as air quality. Local building departments may assume jurisdiction over the building, mechanical, plumbing, or electrical permits required for construction projects. In these instances, the local jurisdiction also may implement its own permit/license fee schedule. (see Building, Mechanical, Electrical and Plumbing Permits)

Local fire authorities also may have their own enforcement program, may require a permit and may adopt a fee schedule. Fire safety inspections may be conducted locally by the municipal fire chief or the county sheriff. (see Fire Safety Inspections)

Local authorities often administer land use regulations and restrictions that may affect location of a bioenergy project. Choosing a site for a plant may be limited by zoning regulations, floodplain or wetland restrictions or lakeshore preservation requirements. The local planning board or board of county commissioners can provide more information on land use regulations.

Supplying electric power, natural gas and water to a site is usually regulated locally. The city or town council or board of county commissioners must grant permission for construction of gas, water, sewer and other mains within the city limits, and for construction of utility mains and lines along city streets and county roads. City or town councils may permit extension of utility lines outside city limits.

Written permission is required from the board of county commissioners for any excavation, construction or other encroachment across county roads. Highway encroachments include all private structures, devices and facilities placed upon, over or under right-of-way. These include: ditches; dikes; flumes; canals; bridges and water; sewer; electric; natural gas; and communication lines.

If it is necessary to connect the local sewage treatment facility, then the facility operator must be informed of the quantity and type of sewage an applicant plans to discharge to ensure that it does not overload the current treatment capacity.

A municipality or county may establish a local air pollution control program. (see Urban Areas/Municipalities)

On county lands, a burning permit may be required to ignite an open fire directly in the open without a receptacle or in a receptacle other than a furnace, multiple-chambered incinerator or waste-wood burner. (see Open Burning Permit)

Navigable Waterways

The State of Montana holds ownership of the land and minerals located below the low water marks of navigable rivers and lakes as established in the Equal Footing Doctrine. The Department of Natural Resources and Conservation (DNRC), Trust Land Management Division, administers these lands on behalf of the state. Projects involving the construction, placement or modification of a structure or improvements in, over, below or above a navigable stream may require permits and be subject to other requirements. Contact the DNRC Land Office with jurisdiction over the project area to learn more about these requirements.

Occupational Safety and Health

All bioenergy projects must comply with occupational safety and health laws and rules, administered by the U.S. Occupational Safety and Health Administration (OSHA) or the Montana Department of Labor and Industry (DLI), Safety and Health Bureau, depending on whether the project is considered a public or a private project. Public projects — those that

involve services performed by public employees for state, city, or county governments — are governed by DOLI Safety and Health Bureau. All other employees and employers fall under the jurisdiction of OSHA.

All public bioenergy projects must comply with the Occupational Health Act of Montana, MCA 50-71-101, *et seq.* No licenses or permits are involved, but a variety of rules require compliance.

For all private bioenergy projects under the jurisdiction of OSHA that have one or more employees, and for all federal employees, Montana laws and rules are superseded by federal laws and rules. In the law (29 CFR), the construction industry standards apply to the building phase of a project and the general industry standards apply to the operational phase of a project. OSHA does not require a license or permit, but does require compliance with all federal rules. OSHA has general, scheduled on-site health and safety inspections for all businesses classified as high hazard. If problems are identified during an inspection, then the owner or contractor can be issued a citation or fined. OSHA also investigates any complaints, fatalities, or accidents. Businesses with 11 or more employees must comply with record-keeping and recording requirements, which include posting an informational poster and filing an OSHA form with a log and summary of all occupational illnesses and accidents. More information on OSHA standards can be obtained from the Billings OSHA office, listed in Appendix B.

Montana law regulates occupational noise and indoor emissions in workplaces that are under the jurisdiction of state and local governments. ARM 17.74.101 establishes maximum noise exposure levels that represent conditions that nearly all workers may be repeatedly exposed to without adverse effect on the ability to hear or understand normal speech. ARM 17.74.102 also establishes maximum threshold limit values for air contaminants that nearly all workers may be exposed to day after day without adverse effects. These rules and programs are administered by the Montana Department of Labor and Industry (DLI), Employment Relations Division, Occupational Safety and Health Bureau: <http://erd.dli.mt.gov/safetyhealth/sbhome.asp>

Urban Areas/Municipalities

A municipality or county may establish and administer a local air pollution control program in its jurisdiction if it is consistent with the state program and is approved by the Department of Environmental Quality (DEQ). Montana law MCA 75-2-301 explains the requirements and restrictions involving local programs. The law allows a local program to establish more stringent or more extensive requirements than the state requires.

Seven counties currently operate local air pollution control programs that encompass the following communities: Billings, Butte, Great Falls, Helena, the northern Flathead Valley, Libby and Missoula. Ravalli County is considering such a program. These local air pollution control programs have jurisdiction over most pollution sources within their boundaries. The state government retains jurisdiction over larger pollution sources that have the potential to emit more than 250 tons per year of any regulated air pollutant or any facility that requires environmental impact statements.

Several of these cities, including Butte, Missoula, Libby, and Helena have adopted rules that regulate and control the emissions from residential solid-fuel-burning devices, which include any fireplace, fireplace insert, wood stove, wood-burning heater, stick-wood boiler, coal-fired

furnace or coal stove. The rules cover devices that produce less than 1 million BTUs per hour in a private residence or commercial establishment. The rules regulate new installations, visible emissions during air pollution alerts, fuels and special permits.

Cities and towns in Montana are classified according to the National Ambient Air Quality Standards (NAAQS). Nonattainment areas exceed allowable limits for certain air pollutants. Bioenergy projects locating in nonattainment areas may need to meet stricter requirements regarding emission rates, depending on the particular problem pollutants and the known concentrations of those pollutants. (see Air Quality)

Water Use

The Montana Water Use Act of 1973 established a permit system for new uses of water. Montana waters may be appropriated only for beneficial uses. Beneficial uses include agricultural, domestic, mining, municipal, power generation and recreational. A Beneficial Water Use Permit is required for all projects that propose the use of un-appropriated water. In addition, any changes in an existing water use permit must be approved by the Department of Natural Resources and Conservation (DNRC).

According to the Montana Constitution, Montana waters, in all their varied forms and locations, belong to the state. This ownership, however, exists on behalf of all state citizens. Water rights holders do not own the water itself. Instead, they possess a right to use the water within state guidelines. Any entity asserting a claim for an existing use of water must file for a certificate of water right with the DNRC Water Rights Bureau. For information, contact the DNRC Regional Office for your county, listed in Appendix B.

Appendix A: Montana Bioenergy Facilities

PROJECTS LISTED BY TECHNOLOGY

Biogas Facilities

Flathead Electric
2510 US Highway 2 East
Kalispell, Montana 59901
(406) 751-1877
c.talley@flathead.coop

Flathead County Solid Waste Landfill LFGE Facility
4098 Highway 93 North
Kalispell, MT 59901
(406) 758-5910 or (406) 751-1877
<http://flathead.mt.gov/waste/index.php>

Montana-Dakota Utilities (MDU) and City of Billings
Billings Regional Landfill
David Hood, project manager
5181 Southgate Dr.
Billings MT 59101

Wastewater Treatment Plants

Billings Wastewater Treatment Plant
PO Box 30958
Billings, Montana 59111
(406) 657-8356
<http://ci.billings.mt.us/index.aspx?NID=216>

Bozeman Wastewater Treatment Plant
255 Mossbridge Rd
Bozeman, Montana 59718
(406) 586-9159

Helena Wastewater Treatment Plant
316 N. Park Ave.
Helena, Montana 59623
(406) 447-8430

Kalispell Wastewater Treatment Plant
Box 1997
Kalispell, Montana 59901
(406) 758-7817

Missoula Wastewater Treatment Plant
100 Clark Fork Dr.
Missoula, Montana 59801
(406) 552-6600

Veolia Water North America
1600 6th St NE
Great Falls, Montana 59404
(406) 761-7004
www.veoliawaterna.com

Manure Digesters

Huls Dairy
1769 Sutherland Lane
Corvallis, Montana 59828
(406) 961-8887
danhuls@bitterroot.net

COMBUSTION FACILITIES-

Sawmills

F.H. Stoltze Land and Lumber Company
PO Box 149
Columbia Falls, Montana 59912
(406) 892-7000
<http://www.stoltzelumber.com>

Fox Lumber Sales Inc
2 Riverbend Court
Hamilton, Montana 59840-2379
(406) 363-5140
www.foxlumber.com

Glacier Log Homes, Inc.
5560 Highway 93 South
Whitefish, Montana 59937
(406) 862-3562

Montana Ghost Wood
3280 Raser Dr.
Missoula, Montana 59808
877-626-1505
(406) 523-4119

Plum Creek MDF, Inc.
265 Meadow Lake Dr.
Columbia Falls, Montana 59912
(406) 892-6251
www.plumcreek.com

or
121 Light Rd
Pablo, Montana 59855
(406) 883-7500

or
Plum Creek Manufacturing Inc
75 Sunset Dr
Kalispell, MT 59901-2347
(406) 751-1285

Logging Facility
2050 US Highway 2 W
Kalispell, Montana 59901
(406) 751-2400

or
Plum Creek Manufacturing LP: Yard
Polson, MT - (406) 883-7522
Plum Creek Manufacturing LP: Purchasing
Polson, MT - (406) 883-7513

or
Plum Creek Manufacturing LP (Ksanka Sawmill)
US Highway 93
Fortine, Montana 59918
(406) 882-4436

Pyramid Mountain Lumber, Inc.
PO Box 549
379 Boy Scout Rd
Seeley Lake, Montana 59868
(406) 677-2201
<http://www.pyramidlumber.com/>

Thompson River Lumber, LP
5532 Hwy 200 E
Thompson Falls, Montana 59873
(406) 827-4311

SCHOOLS USING BIOMASS

Darby Public Schools
209 School Drive
Darby, Montana 59829
(406) 821-3841
<http://www.darby.k12.mt.us/index.html>

Deer Lodge Public Schools
444 Montana Ave
Deer Lodge, Montana 59722
(406) 846-1553

Eureka Public Schools
335 6th Street East
PO Box 2000
Eureka, Montana 59917
(406) 297-5650
<http://www.lchigh.net/>

Kalispell Public Schools – Glacier High School
233 1st Avenue East
Kalispell, Montana 59901
(406) 755-0673
<http://www.sd5.k12.mt.us/>

Philipsburg Public Schools
P.O. Box 400
Philipsburg, Montana 59858
(406) 859-3232
<http://pburg.k12.mt.us/>

St. Ignatius Elementary School
PO Box 400
300 Blaine
St. Ignatius, Montana 59865
(406) 745-3811
<http://stignatiusschools.org/>

St. Labre Indian School
PO Box 216
Ashland, Montana 59003
(406) 784-4500
<http://www.stlabre.org/>

Thompson Falls Public Schools
307 3rd Ave West
PO Box 129
Thompson Falls, Montana 59873
(406) 827-3323
<http://www.thompsonfalls.net/thompsonfalls/site/default.asp>

Townsend Public Schools (pellets)
201 N Spruce
Townsend, Montana 59644-2215
(406) 266-5512
<http://townsendps.schoolwires.com/townsendps/site/default.asp>

Troy Public Schools (pellets)
236 Spokane Avenue
Troy, Montana 59935
(406) 295-4606
<http://troymtk-12.us/>

University of Montana-Western
710 S. Atlantic Street
Dillon, Montana 59725
(406) 683-7331
<http://hal.umwestern.edu/>

Victor Public Schools
425 4th Avenue
Victor, Montana 59875
(406) 642-3221
<http://www.victor.k12.mt.us/>

WOOD PELLET AND BARK PRODUCT PLANTS

Eureka Pellet Mills Inc.
PO Box 667
Eureka, Montana 59917
(406) 297-3125
or
3757 North Reserve
Missoula, Montana 59808
(406) 543-0812
or
4901 Diamond Match Rd
Superior, Montana 59872
(406) 822-4971

George R. White Bark Processing
101 Canton Lane. Phone
Townsend, Montana 59644
(406) 266-5524
or
1365 No. Orchard Street
P.O. Box 7672
Boise, Idaho 83707
(208) 375-0656 or (800) 441-2036
E-mail: info@natbark.com
<http://www.natbark.com/>

Rocky Mountain Compost
3060 Farley Lane
Billings, Montana 59101
(406) 690-4451
<http://www.rockymountaincompost.com/index.php>

Glacier Gold LLC
255 Good Creek Rd
Olney, Montana 59927
(406) 881-3033
www.glaciergold.net

Great Northern Bark Inc.
455 4th Avenue East N
Columbia Falls, Montana 59912-3213
(406) 892-9200

HooDoo Mountain Pellets (currently closed)
1870 South Highway 2
Libby, Montana 59923
(406) 293-5019

Kuhns Timberlight Firewood Co.
34 Kuhns Rd
Roundup, Montana 59072
(877) 323-1897

Montana Timberline Firewood Co.
1960 Helena Flats Rd
Kalispell, Montana 59901
(406) 257-5090
www.hotwood.com

Mountain West Bark Products
4311 Diamond Match Rd
Superior, Montana
(406) 822-4886

Reed's Wholesale Firewood
1440 Corey Lane
Hamilton, Montana 59840
(406) 375-0003

S & D Firewood
1005 Amsterdam Rd
Belgrade, Montana 59714-8943
(406) 388-4646

Western Bee Supplies, Inc.
9th & Main
PO Box 190
Polson, Montana 59860
(406) 883-2918 or (800) 548-8440

Western Pines
4225 Amsterdam Rd
Manhattan, Montana 59741-8232
(406) 282-7527

Oil Seed Processors

Barber Seed Service, Inc
Mike DeVries
2648 Benchland Road
Denton, Montana 59430
(406) 567-2211
barberseed@mtintouch.net
www.barberseed.com

Golden Triangle Co. Rudyard
PO Box 167
Rudyard, Montana 59540
(406) 355-4333

Port of Northern Montana
112 1st Street South
Shelby, Montana 59474
(406) 434-5203
shbneta@3rivers.net /
www.pnmshelby.com

Great Northern Growers Cooperative
1 Railroad Ave., Box 99
Sunburst, Montana 59482
or
PO Box 133
Chester, Montana 59522
Logan Fisher - Brett Earl
(406) 759-5018
www.greatnortherngrowers.com
info@greatnortherngrowers.com

Flathead Biodiesel
208 Birch Grove Rd.
Kalispell, Montana 59901
(912) 633-3344
Jason Willis, CEO / Owner
jason@flatheadbiodiesel.com
Chris Fritz, COO / Co-Owner
chris@flatheadbiodiesel.com
<http://flatheadbiodiesel.com/index.html>

Great Plains Oil and Exploration Company — The Camelina Company
1 Enfield St.
Cincinnati, OH 45218
(877) 922-6645
info@camelinacompany.com
<https://www.camelinacompany.com/Default.aspx>

Safflower Technologies LLC
1745 North Central Ave.
Sidney, Montana 59270
(406) 433-1847 or (701) 770-3457
jbergman@safflowertech.com
<http://www.safflowertech.com/>
or
PO Box 485
Fairview, Montana 59221
(406) 742-5401

Peaks & Prairies
PO Box 856
Malta, Montana 59538
(406) 654-1872
[http:// www.peaksandprairies.net/](http://www.peaksandprairies.net/)

Ethanol Plants

AE Biofuels Inc.
109 S Parkmont
Butte, Montana 59701
(406) 494-7946

Montana Feed & Fuel
315 Main St
Miles City, Montana 59301
(406) 234-2222
www.mtfeedfuel.com
mff@midrivers.com

Biodiesel Facilities (Refineries)

Earl Fisher Biofuels LLP
3362 Cemetery Road
P.O. Box 386 (mailing)
Chester, Montana 59522
(406) 759-5018
info@earlfisherbiofuels.com
www.earlfisherbiofuels.com

Oil Seed Crushers/Processors

Peaks & Prairies, LLC
PO Box 856
Malta, Montana 59538
(406) 654-1872
admin@peaksandprairies.net
<http://www.peaksandprairies.net/index.php>

Montana Specialty Mills, LLC
Corporate Office
P.O. Box 2208
525 3rd Street NW
Great Falls, Montana 59403

Great Falls Plant
P.O. Box 2208
201 4th Ave. NW
Great Falls, Montana 59403

Conrad Plant
P.O. Box 841
336 Eagle Drive
Conrad, Montana 59425
(800) 332-2024
(406) 761-2338
www.mtspecialtymills.com

Sustainable Oils
(919) 428-1102
<http://www.susoils.com/index.php>

Equipment Supplier

Agri-Systems
Robert Hamlin
1300 Minnesota Ave.
Billings, Montana 59101
(406) 245-6231
agri@agrisystems.net
www.agrisystems.net

Algae Research and/or Production

Algae Aqua-Culture Technology Inc.
333 Lupfer Avenue
Whitefish, Montana 59937
(406) 862-5806

Montana State University
Dr. Brent Payton
Chemical and Biological Engineering Dept.
P.O. Box 173920
Bozeman, Montana 59717-3920
(406) 994-2221
bpeyton@coe.montana.edu

Algae-to-Biodiesel Demonstration Facility
Hamilton, Montana
Contact: Green Star Products, Inc.
(800) 741-7648
info@GreenStarUSA.com
<http://www.GreenStarUSA>

Commercial Physical and Biological Research

CTW Energy, Inc
910 Technology Blvd, Suite A
Bozeman, Montana 59718-4012
(406) 579-5401

Biodiesel Distributors/Retailers

Cenex
1108 W. Central
Missoula, Montana 59801
Products: B20 summer, B5 winter

Cenex
4570 N. Reserve St.
Missoula, MT 59808
Products: Roadmaster B5 – premium on-road fuel – mid-April, Fieldmaster B5 – premium off-road fuel – mid-April, B5 – year around

Cenex
115 Main Street
Stevensville, Montana 59870
Products: Roadmaster B5 – premium on-road fuel

For more information about the Cenex retailers, contact Kyle Stensrud, Energy Division Manager, Mountain West Co-op/Cenex, (406) 543-8383, or (800) 773-9000.

Golden State Oil
DBA Save Rite South
1210 Hwy. 2 South
Libby, Montana 59923
(406) 293-4119
Products: B20 summer, B5 winter

Michael's West Exxon
1011 Hwy. 2 West
Kalispell, Montana 59901
(406) 253-2458
Product: B5

Park County Biofuels Co-op
P.O. Box 1531
Livingston, Montana 59047
www.parkbiofuels.net
currently offers B20 from its Mobile Biofueler to members in the Livingston and Park County area of Montana. For membership and rules in the Park County Biofuels Co-op, contact Jim Earl, (406) 579-0876.

Paul House
Bozeman Biofuels, DBA
PO Box 562
Bozeman, Montana 59771
(406) 580-3223

Story Distributing Company
DBA Pacific Pride
163 Thunder Road
Belgrade, Montana 59714

Town and Country Supply
800 E Main
Laurel, Montana 59044
(406) 628-6314
Product: Bulk purchase B100 and off-road biodiesel and blends.

Appendix B: Agencies/Organizations

BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The University of Montana
Bureau of Business and Economic Research (MBB005)
Gallagher Business Building
32 Campus Dr. #6840
Missoula, Montana 59812-6840
(406) 243-5113
<http://www.bber.umt.edu/>

EASTERN AGRICULTURAL RESEARCH CENTER

1501 North Central
Sidney, Montana 59270
(406) 433-2208
info@sidney.ars.usda.gov
<http://www.sidney.ars.usda.gov/state/>

ELECTRIC COOPERATIVES

Montana Electric Cooperatives' Association
PO Box 1306
Great Falls, Montana 59403
(406) 761-8333
meca@mtco-ops.com
<http://www.mtco-ops.com/>

Beartooth Electric Cooperative, Inc.
PO Box 110
1306 N Broadway
Red Lodge, Montana 59068
(406) 446-2310
bte@starband.net

Big Flat Electric Cooperative, Inc.
PO Box 229
333 S. 7th Street E.
Malta, Montana 59538
(406) 654-2040
www.bigflatelectric.com

Big Horn County Electric Cooperative, Inc.
303 S. Mitchell Ave.
Hardin, Montana 59034
(406) 665-2830

Southern Montana Electric G&T Cooperative, Inc.
3521 Gabel Rd. Suite 5
Billings, Montana 59102
(406) 294-9527
<http://www.smegt.net/about.htm>

Fergus Electric Cooperative, Inc.
84423 U.S. Hwy 87
Lewiston, Montana 59457-2058
(406) 538-3465
ferguselectric@ferguselectric.coop
<http://www.ferguselectric.coop/>

Flathead Electric Cooperative, Inc.
Kalispell Office:
2510 U.S. Hwy 2 East
Kalispell, Montana 59901
(406) 751-4483
Libby Office:
121 West 4th Street
Libby, Montana 59923
(406) 293-7122 or Toll Free 1-800-735-8489
<http://www.flatheadelectric.com/>

Glacier Electric Cooperative, Inc.
410 East Main Street
Cut Bank, Montana 59427-3012
(406) 873-5566
<http://www.glacierelectric.com/>

Goldenwest Electric Cooperative, Inc.
PO Box 177
108 West 1 Avenue S
Wibaux, Montana 59353
(406) 796-2423
gwec@midrivers.com

Hill County Electric Cooperative, Inc.
2121 Hwy 2 NW
PO Box 2330
Havre, Montana 59501
(877) 394-7804
<http://www.hcelectric.com/>

Lincoln Electric Cooperative, Inc.
500 Osloski Rd
Eureka, Montana 59917-0628
(406) 889-3301 or (800) 442-2994
info@lincolnelectric.coop
<http://www.lincolnelectric.coop/>

Lower Yellowstone Rural Electric Association
Hwy 16 NW
PO Box 1047
Sidney, Montana 59270
(406) 488-1602
lyrec@lyrec.com
<http://www.lyrec.com/>

Marias River Electric Cooperative, Inc.
P.O. Box 729
910 Roosevelt Hwy
Shelby, Montana 59474
(406) 434-5575
mrec@mariasriverec.com
<http://www.mariasriverec.com/>

McCone Electric Co-op, Inc.
110 Main Street
P.O. Box 368
Circle, Montana 59215
(406) 485-3430
(800) 684-3605
info@mcconelectric.coop
<http://www.mcconelectric.coop/index.htm>

Mid-Yellowstone Electric Cooperative, Inc.
PO Box 386
203 Elliot Ave.
Hysham, Montana 59038
(406) 342-5521
myec@rangeweb.net

Missoula Electric Cooperative, Inc.
1700 West Broadway
Missoula, Montana 59808
(406) 541-4433
(800) 352-5200
<http://www.missoulaelectric.com/index.aspx>

Northern Electric Cooperative, Inc.
PO Box 287
75 Main St.
Opheim, Montana 59250
(406) 762-3411
necmgr@nemont.net

Park Electric Cooperative, Inc.
P.O. Box 1119
5706 U.S. Hwy 89 South
Livingston, Montana 59047-1119
(406) 222-3100
info@parkelectric.coop
<http://www.parkelectric.coop/>

Ravalli County Electric Co-Op, Inc.
1051 Eastside Hwy
Corvallis, Montana 59828-0190
(406) 961-3001
<http://www.ravallielectric.com/>

Sheridan Electric Cooperative, Inc.
PO Box 227
Medicine Lake, Montana 59247-0227
(406) 789-2231
info@sheridanelectric.coop
<http://www.sheridanelectric.coop/index.html>

Southeast Electric Cooperative, Inc.
110 S. Main St.
Ekalaka, Montana 59324
(406) 775-8762 or (888) 485-8762
info@seecoop.com
<http://www.seecoop.com/index.htm>

Sun River Electric Cooperative, Inc.
P.O. Box 309
Fairfield, Montana 59436
(406) 467-2526
<http://www.sunriverec.com/>

Tongue River Electric Cooperative, Inc.
PO Box 138
Main Street/Hwy 212
Ashland, Montana 59003
(406) 784-2341 or (800) 860-8235

Upper Missouri G&T Electric Co-Op, Inc.
PO Box 1069
111 2nd Avenue SW
Sidney, Montana 59270
(406) 433-4100
info@uppermo.com
<http://www.uppermo.com/>

Valley Electric Cooperative, Inc.
PO Box 951
1130 Hwy 2 West
Glasgow, Montana 59230
(406) 228-9351
vecmgr@nemont.net

Vigilante Electric Cooperative, Inc.
PO Box 1049
225 East Bannack Street
Dillon, Montana 59725
(406) 683-2327 or (800) 221-8271
contact@vec.coop
<http://www.vec.coop/>

Yellowstone Valley Electric Co-Op, Inc.
PO Box 249
150 Cooperative Way
Huntley, Montana 59037-0249
(406) 348-3411
<http://www.yvec.com/index.php>

Federal System

Bureau of Reclamation
Great Plains Regional Office
U.S. Department of the Interior
PO Box 36900
Billings, Montana 59107- 6900
(406) 247-7610
<http://www.usbr.gov/gp/>

ENVIRONMENTAL QUALITY COUNCIL

See MONTANA ENVIRONMENTAL QUALITY COUNCIL

INDIAN AGENCIES

Blackfeet Agency
Bureau of Indian Affairs
Box 880
Browning, Montana 59417
(406) 338-7544
(Blackfeet Tribe)

Crow Agency
Bureau of Indian Affairs
Crow Agency, Montana 59022
(406) 638-2672
(Crow Tribe)

Flathead Indian Agency
Bureau of Indian Affairs
Pablo, Montana 59855
(406) 675-2700
(Confederated Salish and Kootenai Tribes)

Fort Belknap Agency
Bureau of Indian Affairs
P.O. Box 98
Harlem, Montana 59526
(406) 353-2901
(Gros Ventre and Assiniboine Tribes)

Fort Peck Agency
Bureau of Indian Affairs
P.O. Box 637
Poplar, Montana 59255
(406) 768-5312
(Assiniboine and Sioux Tribes)

Northern Cheyenne Agency
Bureau of Indian Affairs
Lame Deer, Montana 59043
(406) 477-8242
(Northern Cheyenne Tribe)

Rocky Boy's Agency Representative
Bureau of Indian Affairs
Box Elder, Montana 59521
(406) 395-4476
(Chippewa Cree Tribe)

INTERMOUNTAIN RESEARCH STATION

See U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE

MONTANA AGRICULTURAL STATISTICS SERVICE

See U.S. DEPARTMENT OF AGRICULTURE

MONTANA DEPARTMENT OF AGRICULTURE

Growth through Agriculture Program Manager
Montana Department of Agriculture
P.O. Box 200201
Helena, Montana 59620-0201
(406) 444-2402
agr@mt.gov
<http://agr.mt.gov/business/GTA.asp>

MONTANA DEPARTMENT OF COMMERCE

Energy Promotion & Development Division
P.O. Box 200501
Helena MT 59620-0501
406-841-2030
<http://commerce.mt.gov/energy/index.asp>

MONTANA DEPARTMENT OF FISH, WILDLIFE & PARKS

Fisheries Division
Fish, Wildlife and Parks Building
PO Box 200701
1420 East Sixth Ave.
Helena, Montana 59620
(406) 444-2449

Regional Offices (direct correspondence to Fisheries Manager)

Region 1
490 North Meridian Road
Kalispell, Montana 59901
(406) 752-5501

Region 2
3201 Spurgin Road
Missoula, Montana 59804
(406) 542-5500

Region 3
1400 South 19th
Bozeman, Montana 59718
(406) 994-4042

Region 4
4600 Giant Springs Road
Great Falls, Montana 59405
(406) 454-5840

Region 5
2300 Lake Elmo Drive
Billings, Montana 59105
(406) 247-2940

Region 6
54078 U.S. Hwy 2 W
Glasgow, Montana 59230
(406) 228-3700

Region 7
352 I-94 Business Loop
Miles City, Montana 59301
(406) 234-0900

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Lee Metcalf Building
1520 E 6th Ave.
PO Box 200901
Helena, Montana 59620-0901
(406) 444-2544

Air Resources Management Bureau
(406) 444-3490

Energy and Pollution Prevention Bureau
1100 North Last Chance Gulch
(406) 841-5200

Waste & Underground Tank Management Bureau
(406) 444-5300

Water Protection Bureau
(406) 444-3080

MONTANA DEPARTMENT OF JUSTICE

Fire Marshal
Fire Prevention and Investigation Section
Division of Criminal Investigation
Department of Justice
2225 11th Avenue
PO Box 201415
Helena, Montana 59620-1415

(406) 444-2050
alorenz@mt.gov
<http://www.doj.mt.gov/enforcement/fireprevention/default.asp>

Regional Offices

Area 1 – Flathead, Granite, Lake, Lincoln, Mineral, Missoula, Sanders and Ravalli Counties

Dawn R. Drollinger, Deputy State Fire Marshal
Fire Prevention & Investigation Section
Division of Criminal Investigation
P.O. Box 1864
Kalispell, MT 59903
(406) 257-2584
ddrollinger@mt.gov

Area 2 – Blaine, Cascade, Chouteau, Glacier, Hill, Judith Basin, Lewis & Clark, Liberty, Pondera, Teton and Toole Counties

Dick Swingley, Deputy State Fire Marshal
Fire Prevention & Investigation Section
Division of Criminal Investigation
P.O. Box 991
Great Falls, MT 59403
(406) 791-2710
diswingley@mt.gov

Area 3 – Carter, Custer, Daniels, Dawson, Fallon, Garfield, McCone, Petroleum, Phillips, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Treasure, Valley and Wibaux Counties

Jerry Smith, Deputy State Fire Marshal
Fire Prevention & Investigation Section
Division of Criminal Investigation
710 Fort, #10
Miles City, MT 59301
(406) 232-9765
jdsmith@mt.gov

Area 4 – Big Horn, Carbon, Fergus, Golden Valley, Musselshell, Park, Stillwater, Sweet Grass, Wheatland and Yellowstone Counties

Sally McKenna, Deputy State Fire Marshal
Fire Prevention & Investigation Section
Division of Criminal Investigation
P.O. Box 31094
Billings, MT 59107-1094
(406) 896-4388
smckenna@mt.gov

**Area 5 – Beaverhead, Broadwater, Deer Lodge, Gallatin, Jefferson, Lewis & Clark,
Madison, Meagher, Powell and Silver Bow Counties**

Pat Clinch, Deputy State Fire Marshal
Fire Prevention & Investigation Section
Division of Criminal Investigation
P.O. Box 201415
Helena, MT 59620-1415
(406) 444-1919
pclinch@mt.gov

MONTANA DEPARTMENT OF LABOR AND INDUSTRY

Safety and Health Bureau
PO Box 1728
1625 11th Ave.
Helena, Montana 59624
(406) 444-1605
<http://erd.dli.mt.gov/safetyhealth/sbhome.asp>

Building Codes Bureau
301 South Park, Room 430
PO Box 200513
Helena, Montana 59620-0513
(406) 841-2009
http://mt.gov/dli/bsd/bc/bs_index.asp

Business & Occupational Licensing Bureau
301 South Park, Room 430
PO Box 200513
Helena, Montana 59620-0513
(406) 841-2302
http://mt.gov/dli/bsd/license/bus_index.asp

Weights and Measures Bureau
2801 N Cooke St.
PO Box 200516
Helena, MT 59620-0516
(406) 443 8065

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

1625 11th Ave.
PO Box 201601
Helena, Montana 59620
(406) 444-2074
<http://dnrc.mt.gov/>

Conservation and Resource Development Division

Conservation Districts Bureau

(406) 444-6671

<http://dnrc.mt.gov/cardd/consdist/default.asp>

Forestry Division

Biomass Utilization Program

2705 Spurgin Rd.

Missoula, MT 59804

(406) 542-4300

<http://dnrc.mt.gov/forestry/default.asp>

Oil and Gas Division

Montana Board of Oil and Gas

2535 St. Johns Avenue

Billings, Montana 59102

(406) 656-0040

<http://bogc.dnrc.mt.gov/default.asp>

Trust Land Management Division

Capitol Station

1625 11th Avenue

Helena, Montana 59620

(406) 444-2074

<http://dnrc.mt.gov/trust/default.asp>

Field Operations

Central Land Office

8001 N. Montana Avenue

Helena, Montana 59602

(406) 458-3501

Eastern Land Offices

321 Main Street

P.O. Box 1794

Miles City, Montana 59301

(406) 232-2034 or 232-2045

Northeastern Land Office

613 N. E. Main St.

P.O. Box 1021

Lewistown, Montana 59457-1021

(406) 538-7789

Northwestern Land Office
655 Timberwolf Parkway
Suite 1
Kalispell, Montana 59901-2557
(406) 751-2240

Southern Land Office
Airport Industrial Park
1371 Rintop Drive
Billings, Montana 59105-1978
(406) 247-4400

Southwestern Land Office
1401 27th Ave.
Missoula, Montana 59804
(406) 542-4200

Water Resources Division

All Bureaus:

DNRC Water Resources
Water Rights Bureau
1424 Ninth Avenue
PO Box 201601
Helena, MT 59620-1601
(406) 444-6610

Water Adjudication Bureau
http://www.dnrc.mt.gov/wrd/water_rts/adjudication/default.asp

Water Management Bureau
http://www.dnrc.mt.gov/wrd/water_mgmt/default.asp

Water Operations Bureau
http://www.dnrc.mt.gov/wrd/water_op/default.asp

Water Projects Bureau
http://www.dnrc.mt.gov/wrd/water_proj/default.asp

Water Rights Bureau
http://www.dnrc.mt.gov/wrd/water_rts/default.asp

Montana Water Resources Regional Offices

Billings Regional Office
Airport Industrial Park
1371 Rintop Dr.
Billings, Montana 59105
(406) 247-4415
http://dnrc.mt.gov/wrd/regional_offices/billings/billings_ro.asp

Serving: Big Horn, Carbon, Stillwater, Sweet Grass, Treasure, Yellowstone, Rosebud, Powder River, Custer, Prairie, Fallon, and Carter Counties

Bozeman Regional Office
2273 Boot Hill Court
Suite 110
Bozeman, Montana 59715
(406) 586-3136
http://dnrc.mt.gov/wrd/regional_offices/bozeman/bozeman_ro.asp
Serving: Gallatin, Madison, and Park Counties

Glasgow Regional Office
222 6th Street S
Glasgow, Montana 59230
(406) 228-2561
http://dnrc.mt.gov/wrd/regional_offices/glasgow/glasgow_ro.asp
Serving: Daniels, Dawson, Garfield, McCone, Phillips, Richland, Roosevelt, Sheridan, Valley, and Wibaux Counties

Havre Regional Office
210 6th Ave.
PO Box 1828
Havre, Montana 59501
(406) 265-5516
http://dnrc.mt.gov/wrd/regional_offices/havre/havre_ro.asp
Serving: Blaine, Chouteau, Glacier, Hill, Liberty, Pondera, Teton, and Toole Counties

Helena Regional Office
1424 9th Ave.
P.O. Box 201601
Helena, Montana 59620
(406) 444-6999
http://dnrc.mt.gov/wrd/regional_offices/helena/helena_ro.asp
Serving: Beaverhead, Broadwater, Deer Lodge, Jefferson, Lewis and Clark, Powell, and Silver Bow Counties

Kalispell Regional Office
655 Timberwolf Pkwy
Suite 4
Kalispell, Montana 59901
(406) 752-2288
http://dnrc.mt.gov/wrd/regional_offices/kalispell/kalispell_ro.asp
Serving: Flathead, Lake, Lincoln, and Sanders Counties

Lewiston Regional Office
613 NE Main, Suite E
Lewiston, Montana 59457
(406) 538-7459

http://dnrc.mt.gov/wrd/regional_offices/lewistown/lewistown_ro.asp
Serving: Cascade, Fergus, Golden Valley, Judith Basin, Meagher, Musselshell, Petroleum, and Wheatland Counties

Missoula Regional Office
Town & Country Shopping Center
1610 S 3rd St W
Suite 103
Missoula, Montana 59801
(406) 721-4284
http://dnrc.mt.gov/wrd/regional_offices/missoula/missoula_ro.asp
Serving: Granite, Mineral, Missoula, and Ravalli Counties

MONTANA DEPARTMENT OF PUBLIC SERVICE REGULATION

PO Box 202601
Helena, Montana 59620

Public Service Commission
(406) 444-6199

Utility Division
(406) 444-6180

MONTANA DEPARTMENT OF REVENUE

PO Box 5805
Helena, Montana 59604
(406) 444-6900
(866) 859-2254
<http://mt.gov/revenue/>

Natural Resource and Corporation Tax Division
PO Box 5805
Helena, Montana 59604
(406) 444-6900

Property Assessment Division
PO Box 8018
Helena, Montana 59604
(406) 841-2599

MONTANA DEPARTMENT OF TRANSPORTATION

Highways and Engineering Division
(406) 444-6002
lfrazier@mt.gov

Motor Carrier Services Division
(406) 444-7638
dsheehy@mt.gov

Fuel Tax Management and Analysis Bureau
406 444-7284

Right-of-Way Section Outdoor Advertising Contacts:

Deanna Campbell, (406) 444-6238
Allen Hagadone, (406) 444-7232
Pat Hurley, (406) 444-6068
John Ramsey, (406) 444-6067
Tim Dinsdale, (406) 444-6067
Herbert Stanley, (406) 444-5384

District Offices

Billings District
424 Morey St.
PO Box 20437
Billings, Montana 59104-0437
(406) 252-4138 or (888) 863-8465

Lewistown Area Office
1620 Airport Road
PO Box 491
Lewistown, Montana 59457-0491
(406) 538-1300

Butte District
3751 Wynne
PO Box 3068
Butte, Montana 59702-3068
(406) 494-9600 or (800) 261-6909

Bozeman Area Office
907 North Rouse Avenue
PO Box 1110
Bozeman, Montana 59771-1110
(406) 556-4700

Glendive District
503 N River Avenue
PO Box 890
Glendive, Montana 59330-0890
(406) 345-8200 or (888) 689-5296

Miles City Area Office
217 North 4th Street
PO Box 460
Miles City, Montana 59301-0460
(406) 233-3600 or (888) 229-1093

Wolf Point Area Office
200 East Highway 25
Wolf Point, Montana 59201-9001
(406) 653-6700

Great Falls District
200 Smelter Avenue NE
PO Box 1359
Great Falls, Montana 59403-1359
(406) 454-5880 or (888) 730-0898

Havre Area Office
1649 US Highway 2 NW
Havre, Montana 59501-3455
(406) 262-5500

Missoula District
2100 W Broadway
PO Box 7039
Missoula, Montana 59807-7039
(406) 523-5800 or 888-231-5819

Kalispell Area Office
85 5th Avenue East North
PO Box 7308
Kalispell, Montana 59903-0308
(406) 751-2000

MONTANA ELECTRIC COOPERATIVE ASSOCIATION

See ELECTRIC COOPERATIVES

MONTANA ENVIRONMENTAL QUALITY COUNCIL

Environmental Quality Council
Legislative Environmental Policy Office
P.O. Box 201704
Helena, Montana 59620-1704
(406) 444-3742
<http://leg.mt.gov/css/Services%20Division/Lepo/default.asp>

PELLET FUELS INSTITUTE

1901 North Moore St.
Suite 600
Arlington, Virginia 22209
(703) 522-6778

PUBLIC SERVICE COMMISSION

See MONTANA DEPARTMENT OF PUBLIC SERVICE REGULATION

STATE FIRE MARSHAL

Allen Lorenz, State Fire Marshal
Fire Prevention and Investigation Section
Division of Criminal Investigation
Department of Justice
P.O. Box 201415
Helena, MT 59620-1415
(406) 444-2050
<http://www.doj.mt.gov/enforcement/fireprevention/default.asp>

U.S. ARMY CORPS OF ENGINEERS

Omaha District
1616 Capitol Ave.
Omaha, Nebraska 68102
(402) 996-3802
<http://www.usace.army.mil/Pages/Default.aspx>

U.S. BUREAU OF ALCOHOL, TOBACCO, FIREARMS, & EXPLOSIVES

Regional Director (Compliance)
221 Main Street, Eleventh Floor
San Francisco, California 94105
(415) 744-7011
<http://www.atf.gov/>

U.S. DEPARTMENT OF AGRICULTURE

Montana Farm Service Agency
Farm Service Agency
Public Affairs Staff
1400 Independence Ave., S.W.
STOP 0506
Washington, DC 20250-0506
<http://www.fsa.usda.gov/mt>

Natural Resource Conservation Service
10 East Babcock Street
Federal Building, Room 443
Bozeman, MT 59715-4704
(406) 587-6811 or (866) 880-6727

Forest Service
Forest Inventory & Analysis
507 25th St.
Ogden, Utah 84401
(801) 625-5388

Montana Agricultural Statistics Service
10 W 15th St., Suite 3100
Helena, Montana 59626
(406) 441-1240 or 800-835-2612

Forest Service Offices

Beaverhead-Deerlodge National Forest
420 Barrett St.
Dillon, Montana 59725-3572
(406) 683-3900
(406) 683-3913 (24-hour recorded information line)

Bitterroot National Forest
1801 North First Street
Hamilton, Montana 59840
(406) 363-7100
<http://www.fs.fed.us/r1/bitterroot/>

Custer National Forest
1310 Main Street
Billings, Montana 59105
(406) 657-6200
<http://www.fs.fed.us/r1/custer/>

Flathead National Forest
650 Wolfpack Way
Kalispell, Montana 59901
(406) 758-5200
<http://www.fs.fed.us/r1/flathead/>

Gallatin National Forest
P.O. Box 130
Bozeman, Montana 59771
(406) 587-6701
<http://www.fs.fed.us/r1/gallatin/>

Helena National Forest
2880 Skyway Drive
Helena, Montana 59602
(406) 449-5201
<http://www.fs.fed.us/r1/helena/>

Kootenai National Forest
1101 Hwy. 2 West
Libby, Montana 59923
(406) 293-6211
<http://www.fs.fed.us/r1/kootenai/>

Lewis and Clark National Forest
1101 15th Street N.
Great Falls, Montana 59401
(406) 791-7700
<http://www.fs.fed.us/r1/lewisclark/>

Lolo National Forest
Fort Missoula, Bldg 24
Missoula, Montana 59804
(406) 329-3750
<http://www.fs.fed.us/r1/lolo/>

U.S. DEPARTMENT OF THE INTERIOR

Department of the Interior
1849 C Street, N.W.
Washington, D.C. 20240
(202) 208-3710
webteam@ios.doi.gov

Bureau of Indian Affairs
316 N 26th St.
Billings, Montana 59101
(406) 247-7943
Main page: <http://www.doi.gov/bia/index.html>

Rocky Mountain Region page:
http://www.doi.gov/bia/bia_regions_rocky_mountain.html

Bureau of Land Management*
State Office
5001 Southgate Drive
Billings, Montana 59101
(406) 896-5000
MT_SO_Information@blm.gov
<http://www.blm.gov/mt/st/en.html>
*Headquarters for three-state area: Montana, North Dakota, and South Dakota

Field Offices

Billings Field Office
5001 Southgate Drive
Billings, Montana 59101
(406) 896-5013
MT_Billings_FO@blm.gov
http://www.blm.gov/mt/st/en/fo/billings_field_office.html

Butte Field Office
PO Box
106 N. Parkmont
Butte, Montana 59702
(406) 533-7600
MT_Butte_FO@blm.gov
http://www.blm.gov/mt/st/en/fo/butte_field_office.html

Dillon Field Office
1005 Selway Dr.
Dillon, Montana 59725-9431
(406) 683-2337
MT_Dillon_FO@blm.gov

http://www.blm.gov/mt/st/en/fo/dillon_field_office.html

Glasgow Field Station
5 Lasar Drive
Glasgow, Montana 59230
(406) 228-3750
MT_Glasgow_FS@blm.gov
http://www.blm.gov/mt/st/en/fo/malta_field_office.html

Great Falls Field Station
1101 15th Street North
Great Falls, Montana 59403
(406) 791-7700
MT_Great_Falls_FS@blm.gov

Havre Field Station
3990 Highway 2 West
Havre, Montana 59501
MT_Havre_FS@blm.gov
http://www.blm.gov/mt/st/en/fo/malta_field_office.html

Lewistown Field Office
920 Northeast Main
Lewistown, Montana 59457
(406) 538-1900
MT_Lewistown_FO@blm.gov
http://www.blm.gov/mt/st/en/fo/lewistown_field_office.html

Malta Field Office
501 South 2nd Street East
Malta, Montana 59538-0047
(406) 654-5100
MT_Malta_FO@blm.gov
http://www.blm.gov/mt/st/en/fo/malta_field_office.html

Miles City Field Office
111 Garryowen Road
Miles City, Montana 59301-0940
(406) 233-2800
MT_Miles_City_FO@blm.gov
http://www.blm.gov/mt/st/en/fo/miles_city_field_office.html

Missoula Field Office
3255 F. Missoula Road
Missoula, Montana 59804-7293
(406) 329-3914
MT_Missoula_FO@blm.gov
http://www.blm.gov/mt/st/en/fo/missoula_field_office.html

U.S. ENVIRONMENTAL PROTECTION AGENCY

EPA Region 8, Montana Operations Office
Federal Building
10 W 15th St.
Suite 3200
Helena, MT 59601
(406) 457-5000 or (406) 457-2690
<http://www.epa.gov/region8/index.html>

Attn: David C. Hurlin
Environmental Protection Agency
Compliance & Innovative Strategies Division
Light Duty Vehicle Group
2000 Traverwood Drive
Ann Arbor, MI 48105
Phone: (734) 214-4098
Fax: (734) 214-4676
Email: Imports@epa.gov

Attn: Jim Caldwell
Environmental Protection Agency
Office of Transportation and Air Quality
Mail Code 6406J
1200 Pennsylvania Ave. NW
Washington, DC 20460
(202) 343-9302
Email: caldwell.jim@epa.gov

U.S. FEDERAL ENERGY REGULATORY COMMISSION

Office of Energy Market Regulation
888 First Street, NE
Washington, DC 20426
(202) 219-2836
<http://www.ferc.gov/about/offices/oemr.asp>

U.S. INTERSTATE COMMERCE COMMISSION

Surface Transportation Board
395 E Street, SW
Washington, DC 20423-0001
(202) 245-0245

Office of Public Assistance, Governmental Affairs, and Compliance:
(202) 245-0238
E-mail: STBHelp@stb.dot.gov

U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

2900 4th Ave. N, Suite 303
Billings, Montana 59101
(406) 247-7494
<http://www.osha.gov/index.html>

APPENDIX C: Biomass Resources

Introduction

Montana's wood products, agricultural, and municipal sectors produce a wide variety of biomass resources, including wood, agricultural, and solid waste.

Wood Resources

There are currently some 315 commercial logging firms in the state, and many of them can be considered commercial biomass suppliers. This number may not reflect temporary and permanent closures due to recent economic slowdown.

Mill residues are the least expensive residue available, but its availability is decreasing. According to the report *An Assessment of Forest-based Woody Biomass Supply and Use in Montana*, annual consumption of woody biomass in Montana is 2.2 to 2.7 million dry tons (MDT). This report does not reflect data influenced by the closure of the Smurfit-Stone plant at Frenchtown in January 2010. Says the report:

“Mill residue has decreased from about 1.5 to 1.0 MDT annually between 2004 and 2008. Similarly, logging residue has decreased from about 0.86 to 0.52 MDT annually during the same period, the result of falling timber harvest levels and increased efficiency. This woody biomass supply source is believed to be underutilized, but availability is constrained, and the characteristics of logging residue often make it unsuitable for facilities that require clean, dry feedstock.

Total live and standing dead tree above-ground woody biomass on Montana's 20 million acres of non-reserved timberlands exceeds 850 MDT and represents the largest and most feasible source for additional woody biomass feedstock. Live and standing dead tree above-ground woody biomass is underutilized due to political and economic constraints on availability rather than supply levels. The availability of woody biomass supply was estimated to be constrained to somewhere closer to 40 MDT, which represents a multi-decade supply from just 3.59 million acre (18 percent) of timberlands in Montana and an even smaller proportion (5 percent) of total biomass on timberlands. Nearly 70 percent of this potentially available supply of biomass is located on national forests, while just 46 percent of the potentially available acres are in national forests.”

Fig. 15 shows forest residue for the United States. Tables 19, 20, and 21 show Montana logging residue and mill wood residue.

Agricultural Resources

Biomass feedstocks for energy can include wheat, barley, and corn for ethanol production (see Table 22); straw from grain crops for direct combustion; safflower, canola, and camelina oilseed for conversion to diesel fuel extenders or substitutes; and manure for biogas production or direct combustion.

Grains or other agricultural crops can be purchased from a grower or grain elevator. Agricultural industry wastes often are available directly from the industry involved. Crop residues such as straw are available from farmers or ranchers. Safflower, canola, and

camelina oilseed are available in some areas of Montana, shown below in Tables 23 and 24, and Fig. 16.

The Montana Agricultural Statistics Service, which is supported by the U.S. Department of Agriculture, is the primary source of statistical information for Montana agricultural operations. Other sources for statistical data include the U.S. Department of Energy's Alternative Fuels and Advanced Vehicles Data Center and the Southern Agricultural Research Center at Montana State University in Bozeman.

Solid Waste Resources

EPA, the federal agency that regulates disposal of solid waste, favors recycling, waste reduction, and combustion over landfilling, which is considered a last resort. DEQ's Solid Waste Section can identify municipal solid waste sources (see Table 9) and new regulations.

Fig. 15: Forest Residues

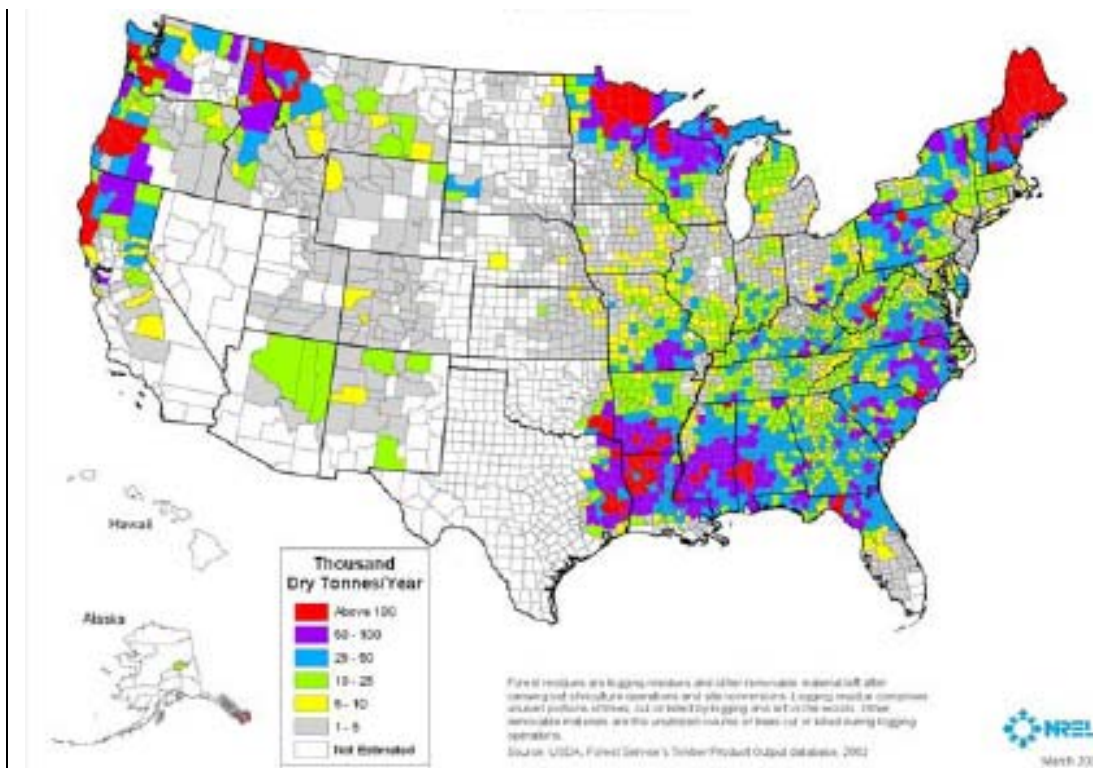


Table 19: Montana logging residue by county and ownership, 2004 (dry tons)

County name	national forest	other public	private	Total
Beaverhead County	745	1,385	4,235	6,365
Big Horn County			4,350	4,350
Broadwater County	1,631		850	2,481
Carter County	2		10,398	10,399
Cascade County	< 0.5		4,236	4,236
Chouteau County		< 0.5	13	13
Custer County			1,816	1,816
Deer Lodge County	< 0.5		4,047	4,047
Fergus County			21,402	21,402
Flathead County	29,660	27,973	114,252	171,885
Gallatin County	1,088		7,364	8,451
Glacier County		65	10,657	10,722
Golden Valley County			2,072	2,072
Granite County	4,342	3,717	17,636	25,695
Hill County			562	562
Jefferson County	3,767	23	10,671	14,462
Judith Basin County			611	611
Lake County	258	5,580	30,975	36,813
Lewis and Clark County	3,199	696	18,233	22,129
Lincoln County	29,829	4,065	90,104	123,998
Madison County	< 0.5	446	5,030	5,476
Meagher County	743		5,205	5,948
Mineral County	10,902	6,267	24,185	41,354
Missoula County	7,639	7,354	108,681	123,674
Musselshell County		320	1,646	1,966
Park County	492		9,237	9,730
Petroleum County			75	75
Phillips County		346		346
Powder River County	3,436	1,193	20,599	25,228
Powell County	4,493	2,530	47,243	54,266
Ravalli County	6,075	6	8,677	14,758
Rosebud County		6,534	2,526	9,060
Sanders County	16,604	3,844	62,578	83,027
Silver Bow County	< 0.5		4,951	4,951
Stillwater County	17		850	867
Sweet Grass County			3,040	3,040
Toole County			39	39
Treasure County			1,542	1,542
Yellowstone County			2,784	2,784
Total	124,921	72,345	663,375	860,641

Table 20: Montana primary mill wood residue by county of production and residue use, 2004

County name	Mill residue use (dry tons)				Grand Total
	not used	fiber products	fuelwood	miscellaneous	
Beaverhead County	23		642	461	1,126
Broadwater County*	628	86,652	26,129	2,434	15,842
Carbon County	136		53	31	221
Cascade County	124		147	32	303
Fergus County**	16		122	25	163
Flathead County	3,298	354,679	76,232	44,850	479,060
Gallatin County	625		450	829	1,904
Lake County	141	62,440	13,890	2,737	79,208
Lewis and Clark County	4		504	310	817
Lincoln County	551	125,956	30,076	32,298	188,881
Madison County	173		52	228	453
Mineral County	129	46,958	4,039	7,093	58,219
Missoula County	440	188,165	73,146	1,065	262,816
Musselshell County	72		517	269	858
Park County	36	88,740	20,410	1,414	110,599
Powell County***	143	87,640	7,369	25,197	120,349
Ravalli County	2,186		20,780	2,672	25,639
Sanders County	152	34,116	9,454	17,345	61,068
Stillwater County****	136		1,942	233	2,311
Yellowstone County	124		43	76	242
All counties	9,136	1,075,345	285,998	139,599	1,510,078

* includes Broadwater, Jefferson, Judith Basin, Meagher, and Silver Bow counties.

** includes Chouteau, Fergus, and Liberty counties.

*** includes Granite and Powell counties.

**** includes Stillwater, Sweet Grass, and Wheatland counties.

Table 21: Production and disposition of wood residues from Montana sawmills and plywood plants

Residue type	Total utilized	Pulp and board	Energy	Landscape products, animal bedding, and other uses	Unutilized	Total
----- Bone-dry tons ^a -----						
Coarse	712,288	700,768	11,137	383	1,267	
Fine	433,115	374,578	49,375	9,162	1,725	
Sawdust	242,885	198,739	42,056	2,089	1,125	
Planer shavings	190,230	175,838	7,319	7,073	600	
Bark	312,093	-	234,829	77,264	288	
All residues	1,457,496	1,075,345	295,341	86,810	3,280	
----- Percentage of residue use by type -----						
Coarse	99.8	98.2	1.6	0.1	0.2	
Fine	99.6	86.1	11.4	2.1	0.4	
Sawdust	99.5	81.4	17.2	0.9	0.5	
Planer shavings	99.7	92.1	3.8	3.7	0.3	
Bark	99.9	-	75.2	24.7	0.1	
All residues	99.8	73.6	20.2	5.9	0.2	

^aBone-dry ton = 2,000 lb oven-dry wood.

Only 0.2% (3,280 dry tons) of sawmill and plywood plant residue in Montana were not used during 2004. The volume of residue produced as well as the volume not used have likely decreased, as the amount of timber harvested and amount of lumber and plywood produced have declined.

Several commercial and institutional facilities use wood pellets to fuel wood furnaces or boilers in Montana. The state's pellet plants listed in Appendix A, supply dealers around the state and also sell directly to large customers.

Addresses for state and federal agencies that compile information on biomass resources in Montana are listed in Appendix B. Table 23 lists agencies and others who could help identify and locate biomass materials.

Table 23: Information Sources for Biomass Availability

Resources	Agency Contacts*	Private Contacts
Wood products	BBER BLM DNRC USFS	Sawmills Commercial logging firms
Agricultural resources Agricultural crops Agricultural crop residue Agricultural industry waste	FSA DOA MASS	Grain elevators
Food processing waste	DEQ, SWM and WQB	Individual businesses
Animal manure	DOA MASS	Feedlots Dairies
Industrial waste (liquid and solid)	DEQ, SWM and WQB and HWP	Individual industries
Municipal waste (liquid and solid)	DEQ, SWM and HWP	Private waste haulers

BBER—Montana Bureau of Business and Economic Research, University of Montana
 BLM—U.S. Department of the Interior, Bureau of Land Management
 DEQ, HWP—Montana Department of Environmental Quality, Hazardous Waste Program
 DEQ, SWM—Montana Department of Environmental Quality, Solid Waste Bureau
 DEQ, WQB—Montana Department of Environmental Quality, Water Quality Bureau
 DNRC—Montana Department of Natural Resources and Conservation
 DOA—Montana Department of Agriculture
 FSA—Farm Services Agency
 MASS—Montana Agricultural Statistics Service
 USFS—U.S. Forest Service

Table 22

**Ethanol Production (In Gallons) From Distressed Grains Based On a Percentage of Total Harvest*
(Wheat, Barley, and Corn)**

106							
COUNTY	Bushels Produced			Gallons of Ethanol From:			Total Gallons of potential ethanol
	Corn	Wheat	Barley	Corn	Wheat	Barley	
Deer Lodge		see D10	see D10	-			-
Flathead		1,024,000	349,000	-	2,560,000	872,500	3,432,500
Granite		see D10	42,000	-		105,000	105,000
Lake	134,000	791,000	100,000	361,800	1,977,500	250,000	2,589,300
Lincoln		see D10	see D10	-			-
Mineral		see D10	see D10	-			-
Missoula		41,000	see D10	-			-
Powell		see D10	91,000	-		227,500	227,500
Ravalli		48,000	58,000	-	120,000	145,000	265,000
Sanders		26,000	7,000	-	65,000	17,500	82,500
D10 Combined Counties	13,000	71,000	21,000	35,100	177,500	52,500	265,100
NORTHWEST	147,000	2,001,000	668,000	396,900	5,002,500	1,670,000	7,069,400
Blaine		4,234,000	454,000	-	10,585,000	1,135,000	11,720,000
Chouteau		24,313,000	1,025,000	-	60,782,500	2,562,500	63,345,000
Glacier		4,250,000	3,516,000	-	10,625,000	8,790,000	19,415,000
Hill		11,601,000	388,000	-	29,002,500	970,000	29,972,500
Liberty		7,568,000	643,000	-	18,920,000	1,607,500	20,527,500
Phillips		2,203,000	181,000	-	5,507,500	452,500	5,960,000
Pondera		8,393,000	5,103,000	-	20,982,500	12,757,500	33,740,000
Teton		7,301,000	4,793,000	-	18,252,500	11,982,500	30,235,000
Toole		8,259,000	1,918,000	-	20,647,500	4,795,000	25,442,500
NORTH CENTRAL	0	78,122,000	18,021,000	0	195,305,000	45,052,500	240,357,500
Daniels		3,604,000	15,000	-	9,010,000	37,500	9,047,500
Dawson	266,000	3,259,000	374,000	718,200	8,147,500	935,000	9,800,700
Garfield		2,503,000	138,000	-	6,257,500	345,000	6,602,500
McCone		4,625,000	192,000	-	11,562,500	480,000	12,042,500
Richland	261,000	3,788,000	1,486,000	704,700	9,470,000	3,715,000	13,889,700
Roosevelt		5,298,000	287,000	-	13,245,000	717,500	13,962,500
Sheridan		4,491,000	146,000	-	11,227,500	365,000	11,592,500
Valley		4,263,000	91,000	-	10,657,500	227,500	10,885,000
D30 Combined Counties	197,000			531,900			531,900
NORTHEAST	724,000	31,831,000	2,729,000	1,954,800	79,577,500	6,822,500	88,354,800
Broadwater		1,775,000	276,000	-	4,437,500	690,000	5,127,500
Cascade		6,667,000	1,358,000	-	16,667,500	3,395,000	20,062,500
Fergus		7,009,000	431,000	-	17,522,500	1,077,500	18,600,000
Golden Valley		937,000	see D50	-	2,342,500		2,342,500
Judith Basin		3,087,000	292,000	-	7,717,500	730,000	8,447,500
Lewis & Clark		752,000	615,000	-	1,880,000	1,537,500	3,417,500
Meagher		223,000	227,000	-	557,500	567,500	1,125,000

Musselshell		528,000	80,000	-	1,320,000	200,000	1,520,000
Petroleum		825,000	see D50	-	2,062,500		2,062,500
Wheatland		1,110,000	302,000	-	2,775,000	755,000	3,530,000
D50 Combined Counties			131,000	-	0	327,500	327,500
CENTRAL	0	22,913,000	3,712,000	0	57,282,500	9,280,000	66,562,500
Beaverhead		534,000	269,000	-	1,335,000	672,500	2,007,500
Gallatin		3,029,000	1,297,000	-	7,572,500	3,242,500	10,815,000
Jefferson		see D70	see D70	-			-
Madison		835,000	150,000	-	2,087,500	375,000	2,462,500
Silver Bow		see D70	see D70	-			-
D70 Combined Counties		32,000	10,000	-	80,000	25,000	105,000
SOUTH WEST	0	4,430,000	1,726,000	0	11,075,000	4,315,000	15,390,000
Big Horn		3,779,000	846,000	-	9,447,500	2,115,000	11,562,500
Carbon	205,000	156,000	667,000	553,500	390,000	1,667,500	2,611,000
Park		325,000	181,000	-	812,500	452,500	1,265,000
Stillwater		935,000	167,000	-	2,337,500	417,500	2,755,000
Sweet Grass		92,000	see D80	-	230,000		230,000
Treasure	346,000	504,000	see D80	934,200	1,260,000		2,194,200
Yellowstone	540,000	2,538,000	1,400,000	1,458,000	6,345,000	3,500,000	11,303,000
D80 Combined Counties	155,000		269,000	418,500	0	672,500	1,091,000
SOUTH CENTRAL	1,246,000	8,329,000	3,530,000	3,364,200	20,822,500	8,825,000	33,011,700
Carter		755,000	48,000	-	1,887,500	120,000	2,007,500
Custer	177,000	696,000	104,000	477,900	1,740,000	260,000	2,477,900
Fallon		801,000	53,000	-	2,002,500	132,500	2,135,000
Powder River		428,000	46,000	-	1,070,000	115,000	1,185,000
Prairie		725,000	104,000	-	1,812,500	260,000	2,072,500
Rosebud	140,000	1,191,000	202,000	378,000	2,977,500	505,000	3,860,500
Wibaux	28,000	853,000	57,000	75,600	2,132,500	142,500	2,350,600
D90 Combined Counties	119,000			321,300			321,300
SOUTHEAST	464,000	5,449,000	614,000	1,252,800	13,622,500	1,535,000	16,410,300
D98 Combined Counties	47,000			126,900			126,900
STATE TOTALS		2,628,000	153,075,000	31,000,000	7,095,600	382,687,500	77,500,000
							467,283,100

*Numbers may not be exact due to rounding.

**Wheat/ethanol conversion found on Ethanol Producers and Consumers (EPAC) website

***Corn/ethanol conversion found at Department of Energy (DOE) website

****Barley/ethanol conversion found at <http://southeastfarmpress.com/grains/ethanol-barley-0620/>

Note: All bushel production statistics retrieved from [USDA-NASS](https://www.nass.usda.gov/).

Created by: Samantha Sheble, NCAT Intern

Table 23: Canola Acreage, Yield, and Production by Counties and Districts, 2008

County and District	2008			
	Planted	Harvested	Yield	Production
	Acres	Acres	Pounds	Pounds
Flathead	1,200	1,200	1,660	1,
Other	--	--	--	
NORTHWEST	1,200	1,200	1,660	1,
Pondera	2,800	2,800	2,190	6,
Toole	800	800	1,710	1,
Other	800	800	1,790	1,
NORTH CENTRAL	4,400	4,400	2,030	8,
Other	--	--	--	
NORTHEAST	--	--	--	
OTHER DISTRICTS	1,900	1,800	1,780	3,
MONTANA	7,500	7,400	1,910	14,
-- Counties with no acres planted or counties that are combined into "other" counties/districts to avoid disclosure of individual information.				

Table 24: Camelina Acreage, Yield, and Production by Counties and Districts, 2008

Fig. 16: Areas with Safflower Growing Potential

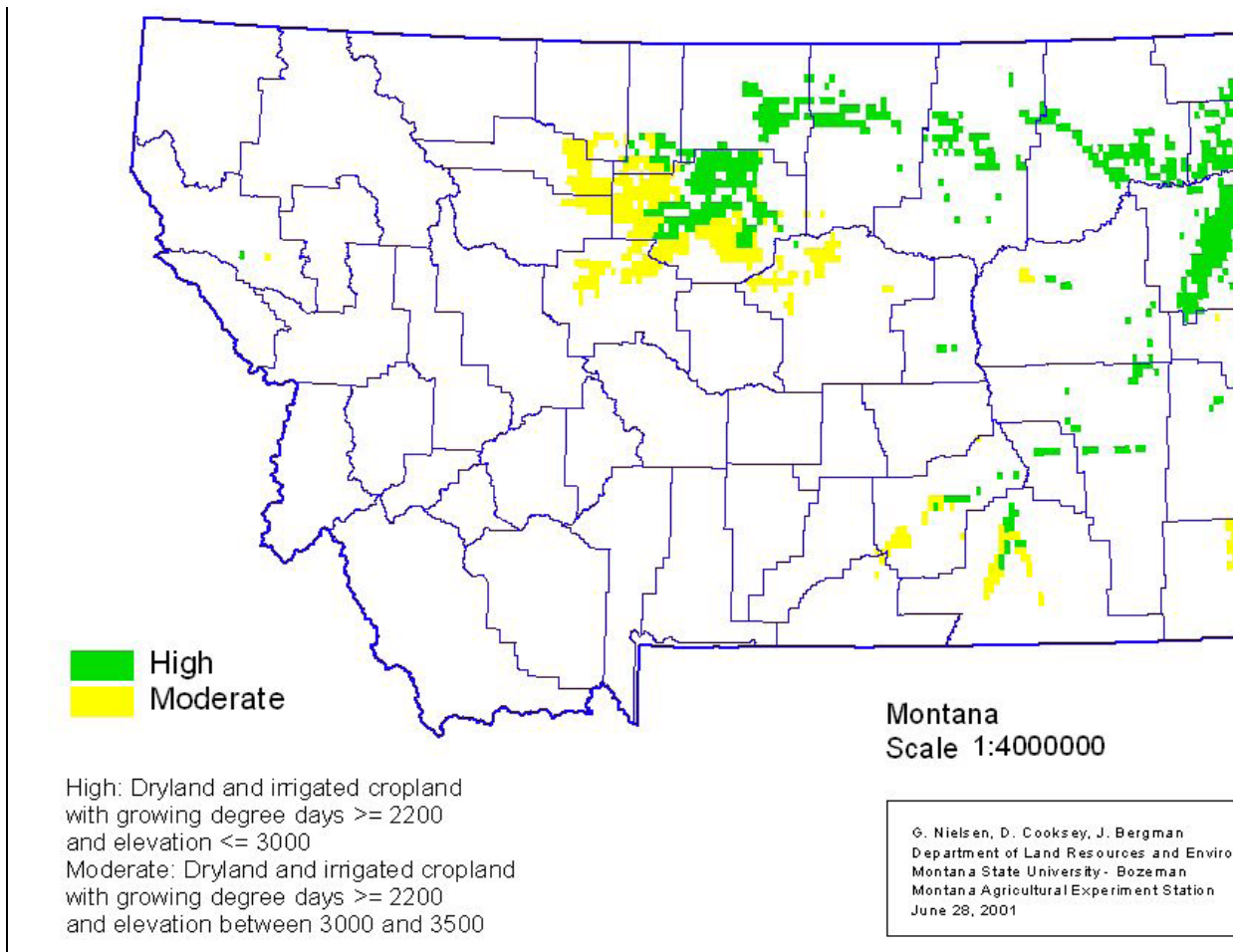


Table 25: Municipal Solid Waste Resources*

COUNTY	TONNAGE 2007
Beaverhead	11,000
Big Horn	81,405
Broadwater	4,545
Cascade	166,403
Custer	11,771
Daniels	1,231
Dawson	15,291
Fallon	7,720
Fergus	11,831
Flathead	127,152
Gallatin	132,997
Hill, Blaine, & Chouteau	21,930
Jefferson	42,451
Lake	22,030
Lewis & Clark	59,000
Liberty	801
Lincoln	19,590
Meagher	1,144
Missoula	188,943
Park	16,393
Phillips	2,571
Pondera	15,134
Powder River	1,700
Powell	4,000
Ravalli	26,843
Richland	14,796
Roosevelt	10,600
Rosebud	11,423
Sanders	10, 227
Sheridan	3,214
Silver Bow	56,308
Stillwater	1,674
Toole	6,758
Valley	12,234
Yellowstone	236,797
TOTAL TONNAGE	1,347,680

*Numbers may not be exact due to rounding.

Glossary of Bioenergy Terms

The following is a short glossary of useful bioenergy terms. Many of the definitions were derived from ones listed in the U.S. Department of Energy Biomass Power Glossary.

Anaerobic digestion: Decomposition of biological wastes by micro-organisms, usually under wet conditions, in the absence of air (oxygen), to produce a gas comprising mostly methane and carbon dioxide.

Anaerobic digestion: Decomposition of biological wastes by micro-organisms, usually under wet conditions, in the absence of air (oxygen), to produce a gas comprising mostly methane and carbon dioxide.

Barrel of oil equivalent (boe): The amount of energy contained in a barrel of crude oil, i.e., approximately 6.1 GJ (5.8 million BTU), equivalent to 1,700 kWh. A “petroleum barrel” is a liquid measure equal to 42 U.S. gallons (35 Imperial gallons or 159 liters); about 7.2 barrels are equivalent to one ton of oil (metric).

Biochemical conversion: The use of fermentation or anaerobic digestion to produce fuels and chemicals from organic sources.

Bioenergy: Useful, renewable energy produced from organic matter. The conversion of the complex carbohydrates in organic matter to energy. Organic matter may either be used directly as a fuel or processed into liquids and gases.

Biofuel: See biomass fuel.

Biogas: A combustible gas derived from decomposing biological waste under anaerobic conditions. Biogas normally consists of 50 to 60 percent methane. See also landfill gas.

Biomass: Organic matter available on a renewable basis. Biomass includes forest and mill residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operation residues, aquatic plants, fast-growing trees and plants, and municipal and industrial wastes.

Biomass fuel: Liquid, solid, or gaseous fuel produced by conversion of biomass. Examples include bioethanol from sugar cane or corn, charcoal or woodchips, and biogas from anaerobic decomposition of wastes.

Biomass energy: See Bioenergy.

Bone dry: Having zero percent moisture content. Wood heated in an oven at a constant temperature of 100°C (212°F) or above until its weight stabilizes is considered bone dry or oven dry.

Bottoming cycle: A cogeneration system in which steam is used first for process heat and then for electric power production.

British thermal unit (BTU): A non-metric unit of heat, still widely used by engineers. One BTU is the heat energy needed to raise the temperature of one pound of water from 60°F to 61°F at one atmosphere pressure. 1 BTU = 1055 joules (1.055 kJ).

Capacity: The maximum power that a machine or system can produce or carry safely. The maximum instantaneous output of a resource under specified conditions. The capacity of generating equipment is generally expressed in kilowatts or megawatts.

Capital cost: The total investment needed to complete a project and bring it to a commercially operable status. The cost of construction of a new plant. The expenditures for the purchase or acquisition of existing facilities.

Cfm: Cubic feet per minute (1000 cfm = 0.472 cubic meters per second, m³/s)

Cellulose: The principal chemical constituent of cell walls of plants: a long chain of simple sugar molecules.

Char: The remains of solid biomass that has been incompletely combusted, such as charcoal if wood is incompletely burned.

Chipper: A machine that produces wood chips by knife action.

Chips: Woody material cut into short, thin wafers. Chips are used as a raw material for pulping and fiberboard or as biomass fuel.

Conifer: Tree, usually evergreen, with cones and needle-shaped or scale-like leaves, producing wood known commercially as softwood.

Cogeneration: The sequential production of electricity and useful thermal energy from a common fuel source. Reject heat from industrial processes can be used to power an electric generator (bottoming cycle). Conversely, surplus heat from an electric generating plant can be used for industrial processes, or space and water heating purposes (topping cycle). Also called combined heat and power.

Combined cycle: Two or more generation processes in series or in parallel, configured to optimize the energy output of the system.

Combined-cycle power plant: The combination of a gas turbine and a steam turbine in an electric generation plant. The waste heat from the gas turbine provides the heat energy for the steam turbine.

Combined heat and power (CHP): See Cogeneration.

Combustion: Burning. The transformation of biomass fuel into heat, chemicals, and gases through chemical combination of hydrogen and carbon in the fuel with oxygen in the air.

Combustion air: The air fed to a fire to provide oxygen for combustion of fuel. It may be preheated before injection into a furnace.

Combustion efficiency: actual heat produced by combustion divided by total heat potential of the fuel consumed

Commercial forest land: Forested land which is capable of producing new growth at a minimum rate of 20 cubic feet per acre/per year, excluding lands withdrawn from timber production by statute or administrative regulation.

Coppice regeneration: The ability of certain hardwood species to regenerate by producing multiple new shoots from a stump left after harvest.

Cord: A stack of wood consisting of 128 cubic feet (3.62 cubic meters). A cord has standard dimensions of 4 x 4 x 8 feet, including air space and bark. One cord contains about 1.2 U.S. tons (oven-dry), i.e., 2400 pounds or 1089 kg.

Diameter at breast height: (DBH) The diameter of a tree measured 4 feet 6 inches above the ground.

Digester: An airtight vessel or enclosure in which bacteria decomposes biomass in water to produce biogas.

Discount rate: A rate used to convert future costs or benefits to their present value.

Downdraft gasifier: A gasifier in which the product gases pass through a combustion zone at the bottom of the gasifier.

Effluent: The liquid or gas discharged from a process or chemical reactor, usually containing residues from that process.

Emissions: Waste substances released into the air or water. See also Effluent.

Energy crops: Crops grown specifically for their fuel value. These include food crops such as corn and sugarcane, and nonfood crops such as poplar trees and switchgrass. Currently, two energy crops are under development: short-rotation woody crops, which are fast-growing hardwood trees harvested in 5 to 8 years, and herbaceous energy crops, such as perennial grasses, which are harvested annually after taking 2 to 3 years to reach full productivity.

Externality: A cost or benefit not accounted for in the price of goods or services. Often "externality" refers to the cost of pollution and other environmental impacts.

Feedstock: Any material which is converted to another form or product.

Fermentation: Conversion of carbon-containing compounds by micro-organisms for production of fuels and chemicals such as alcohols, acids or energy-rich gases.

Firm power (also called firm energy): Power that is guaranteed by the supplier to be available at all times during a period covered by a commitment. That portion of a customer's energy load for which service is assured by the utility provider.

Fluidized-bed boiler: A large, refractory-lined vessel with an air distribution member or plate in the bottom, a hot gas outlet in or near the top, and some provisions for introducing fuel. The fluidized bed is formed by blowing air up through a layer of inert particles (such as sand or limestone) at a rate that causes the particles to go into suspension and continuous motion. The super-hot bed material increased combustion efficiency by its direct contact with the fuel.

Fly ash: Small ash particles carried in suspension in combustion products.

Forest residues: Material not harvested or removed from logging sites in commercial hardwood and softwood stands as well as material resulting from forest management operations such as pre-commercial thinnings and removal of dead and dying trees.

Forest health: A condition of ecosystem sustainability and attainment of management objectives for a given forest area. Usually considered to include green trees, snags, resilient stands growing at a moderate rate, and endemic levels of insects and disease. Natural processes still function or are duplicated through management intervention.

Fossil fuel: Solid, liquid, or gaseous fuels formed in the ground after millions of years by chemical and physical changes in plant and animal residues under high temperature and pressure. Oil, natural gas, and coal are fossil fuels.

Fuel cell: A device that converts the energy of a fuel directly to electricity and heat, without combustion.

Fuel cycle: The series of steps required to produce electricity. The fuel cycle includes mining or otherwise acquiring the raw fuel source, processing and cleaning the fuel, transport, electricity generation, waste management and plant decommissioning.

Fuel handling system: A system for unloading wood fuel from vans or trucks, transporting the fuel to a storage pile or bin, and conveying the fuel from storage to the boiler or other energy conversion equipment.

Furnace: An enclosed chamber or container used to burn biomass in a controlled manner to produce heat for space or process heating.

Gas turbine: (combustion turbine) a turbine that converts the energy of hot compressed gases (produced by burning fuel in compressed air) into mechanical power. Often fired by natural gas or fuel oil.

Gasification: A chemical or heat process to convert a solid fuel to a gaseous form.

Gasifier: A device for converting solid fuel into gaseous fuel. In biomass systems, the process is referred to as pyrolytic distillation. See Pyrolysis.

Gigawatt: (GW) A measure of electrical power equal to one billion watts (1,000,000 kW). A large coal or nuclear power station typically has a capacity of about 1 GW.

Greenhouse effect: The effect of certain gases in the Earth's atmosphere in trapping heat from the sun.

Greenhouse gases: Gases that trap the heat of the sun in the Earth's atmosphere, producing the greenhouse effect. The two major greenhouse gases are water vapor and carbon dioxide. Other greenhouse gases include methane, ozone, chlorofluorocarbons, and nitrous oxide.

Grid: An electric utility company's system for distributing power.

Habitat: The area where a plant or animal lives and grows under natural conditions. Habitat includes living and non-living attributes and provides all requirements for food and shelter.

Hardwoods: Usually broad-leaved and deciduous trees.

Heat Rate: The amount of fuel energy required by a power plant to produce one kilowatt-hour of electrical output. A measure of generating station thermal efficiency, generally expressed in Btu per net kWh. It is computed by dividing the total Btu content of fuel burned for electric generation by the resulting net kWh generation.

Heat transfer efficiency: useful heat output released / actual heat produced in the firebox

Heating value: The maximum amount of energy that is available from burning a substance.

Hectare: Common metric unit of area, equal to 2.47 acres. 100 hectares = 1 square kilometer.

Herbaceous: Non-woody type of vegetation, usually lacking permanent strong stems, such as grasses, cereals and canola (rape).

Higher heating value: (HHV) The maximum potential energy in dry fuel. For wood, the range is from 7,600 to 9,600 Btu/lb (17.7 to 22.3 GJ/t).

Hog fuel: Wood waste, typically produced by a hammer mill, and suitable for combustion in certain combined heat and power units.

Horsepower (hp): A unit for measuring the rate of mechanical energy output usually used to describe the maximum output of engines or electric motors. 1 hp = 550 foot-pounds per second = 2,545 Btu per hour = 745.7 watts = 0.746 kW

Hydrocarbon: Any chemical compound containing hydrogen, oxygen, and carbon.

Incinerator: Any device used to burn solid or liquid residues or wastes as a method of disposal. In some incinerators, provisions are made for recovering the heat produced.

Inclined grate: A type of furnace in which fuel enters at the top part of a grate in a continuous ribbon, passes over the upper drying section where moisture is removed, and descends into the lower burning section. Ash is removed at the lower part of the grate.

Incremental energy costs: The cost of producing and transporting the next available unit of electrical energy. Short run incremental costs (SRIC) include only incremental operating costs. Long run incremental costs (LRIC) include the capital cost of new resources or capital equipment.

Independent power producer: A power production facility that is not part of a regulated utility.

Indirect liquefaction: Conversion of biomass to a liquid fuel through a synthesis gas intermediate step.

Joule: Metric unit of energy, equivalent to the work done by a force of one Newton applied over a distance of one meter (= 1 kg m²/s²). One joule (J) = 0.239 calories (1 calorie = 4.187 J).

Kilowatt (kW): A measure of electrical power equal to 1,000 watts. 1 kW = 3,413 BTU/hr = 1.341 horsepower. See also watt.

Kilowatt hour (kWh): A measure of energy equivalent to the expenditure of one kilowatt for one hour. For example, 1 kWh will light a 100-watt light bulb for 10 hours. 1 kWh = 3,413 BTU.

Landfill gas: A type of biogas that is generated by decomposition of organic material at landfill disposal sites. Landfill gas is approximately 50 percent methane. See also biogas.

Levelized life-cycle cost: The present value of the cost of a resource, including capital, financing and operating costs, expressed as a stream of equal annual payments. This stream of payments can be converted to a unit cost of energy by dividing the annual payment amount by the annual kilowatt-hours produced or saved. By levelizing costs, resources with different lifetimes and generating capabilities can be compared.

Lignin: Structural constituent of wood and (to a lesser extent) other plant tissues, which encrusts the cell walls and cements the cells together.

Megawatt (MW): A measure of electrical power equal to one million watts (1,000 kW). See also watt.

Mill/kWh: A common method of pricing electricity in the U.S. Tenths of a U.S. cent per kilowatt hour.

Mill residue: Wood and bark residues produced in processing logs into lumber, plywood, and paper.

MMBtu: One million British thermal units.

Moisture content: (MC) the weight of the water contained in wood, usually expressed as a percentage of weight, either oven-dry or as received.

Moisture content, dry basis: Moisture content expressed as a percentage of the weight of oven-dry wood, i.e.:

$$[(\text{weight of wet sample} - \text{weight of dry sample}) / \text{weight of dry sample}] \times 100$$

Moisture content, wet basis: Moisture content expressed as a percentage of the weight of wood as-received, i.e.:

$$[(\text{weight of wet sample} - \text{weight of dry sample}) / \text{weight of wet sample}] \times 100$$

Monoculture: The cultivation of a single species crop.

Net present value: The sum of the costs and benefits of a project or activity. Future benefits and costs are discounted to account for interest costs.

Nitrogen fixation: The transformation of atmospheric nitrogen into nitrogen compounds that can be used by growing plants.

Old growth: Timber stands with the following characteristics: large mature and over-mature trees in the overstory, snags, dead and decaying logs on the ground, and a multi-layered canopy with trees of several age classes.

Organic compounds: Chemical compounds based on carbon chains or rings and also containing hydrogen, with or without oxygen, nitrogen, and other elements.

Particulate: A small, discrete mass of solid or liquid matter that remains individually dispersed in gas or liquid emissions. Particulates take the form of aerosol, dust, fume, mist, smoke, or spray. Each of these forms has different properties.

Photosynthesis: Process by which chlorophyll-containing cells in green plants convert incident light to chemical energy, capturing carbon dioxide in the form of carbohydrates.

Pilot scale: The size of a system between the small laboratory model size (bench scale) and a full-size system.

Present value: The worth of future receipts or costs expressed in current value. To obtain present value, an interest rate is used to discount future receipts or costs.

Process heat: Heat used in an industrial process rather than for space heating or other housekeeping purposes.

Producer gas: Fuel gas high in carbon monoxide (CO) and hydrogen (H₂), produced by burning a solid fuel with insufficient air or by passing a mixture of air and steam through a burning bed of solid fuel.

Public utility commissions: State agencies that regulate investor-owned utilities operating in the state.

Public Utility Regulatory Policies Act (PURPA): A federal law requiring a utility to buy the power produced by a qualifying facility at a price equal to that which the utility would otherwise pay if it were to build its own power plant or buy power from another source.

Pyrolysis: The thermal decomposition of biomass at high temperatures (greater than 400° F, or 200° C) in the absence of air. The end product of pyrolysis is a mixture of solids (char), liquids (oxygenated oils), and gases (methane, carbon monoxide, and carbon dioxide) with proportions determined by operating temperature, pressure, oxygen content, and other conditions.

Quad: One quadrillion Btu (10¹⁵ Btu) = 1.055 exajoules (EJ), or approximately 172 million barrels of oil equivalent.

Recovery boiler: A pulp mill boiler in which lignin and spent cooking liquor (black liquor) is burned to generate steam.

Refractory Lining: A lining, usually of ceramic, capable of resisting and maintaining high temperatures.

Refuse-derived fuel (RDF): Fuel prepared from municipal solid waste. Noncombustible materials such as rocks, glass, and metals are removed, and the remaining combustible portion of the solid waste is chopped or shredded. RDF facilities process typically between 100 and 3,000 tons of MSW per day.

Reserve margin: The amount by which the utility's total electric power capacity exceeds maximum electric demand.

Return on investment (ROI): The interest rate at which the net present value of a project is zero. Multiple values are possible.

Rotation: Period of years between establishment of a stand of timber and the time when it is considered ready for final harvest and regeneration.

Saturated steam: Steam at boiling temperature for a given pressure.

Shaft horsepower: A measure of the actual mechanical energy per unit time delivered to a turning shaft. See also horsepower.

SRIC: Short rotation intensive culture - the growing of tree crops for bioenergy or fiber, characterized by detailed site preparation, usually less than 10 years between harvests, usually fast-growing hybrid trees and intensive management (some fertilization, weed and pest control, and possibly irrigation).

Stand (of trees): A tree community that possesses sufficient uniformity in composition, constitution, age, spatial arrangement, or condition to be distinguishable from adjacent communities.

Steam turbine: A device for converting energy of high-pressure steam (produced in a boiler) into mechanical power which can then be used to generate electricity.

Superheated steam: Steam that is hotter than boiling temperature for a given pressure.

Surplus electricity: Electricity produced by cogeneration equipment in excess of the needs of an associated factory or business.

Sustainable: An ecosystem condition in which biodiversity, renewability, and resource productivity are maintained over time.

Therm: A unit of energy equal to 100,000 BTUS (= 105.5 MJ); used primarily for natural gas.

Thermochemical conversion: Use of heat to chemically change substances from one state to another, e.g., to make useful energy products.

Tipping fee: A fee for disposal of waste.

Ton, tonne: One U.S. ton (short ton) = 2,000 pounds. One Imperial ton (long ton or shipping ton) = 2,240 pounds. One metric tonne (tonne) = 1,000 kilograms (2,205 pounds). One oven-dry ton or tonne (ODT, sometimes termed bone-dry ton/tonne) is the amount of wood that weighs one ton/tonne at 0% moisture content. One green ton/tonne refers to the weight of undried (fresh) biomass material - moisture content must be specified if green weight is used as a fuel measure.

Topping cycle: A cogeneration system in which electric power is produced first. The reject heat from power production is then used to produce useful process heat.

Topping and back pressure turbines: Turbines which operate at exhaust pressure considerably higher than atmospheric (noncondensing turbines). These turbines are often multistage types with relatively high efficiency.

Transmission: The process of long-distance transport of electrical energy, generally accomplished by raising the electric current to high voltages.

Traveling grate: A type of furnace in which assembled links of grates are joined together in a perpetual belt arrangement. Fuel is fed in at one end and ash is discharged at the other.

Turbine: A machine for converting the heat energy in steam or high temperature gas into mechanical energy. In a turbine, a high velocity flow of steam or gas passes through successive rows of radial blades fastened to a central shaft.

Turn down ratio: The lowest load at which a boiler will operate efficiently as compared to the boiler's maximum design load.

Waste streams: Unused solid or liquid by-products of a process.

Water-cooled vibrating grate: A boiler grate made up of a tuyere grate surface mounted on a grid of water tubes interconnected with the boiler circulation system for positive cooling. The structure is supported by flexing plates allowing the grid and grate to move in a vibrating action. Ashes are automatically discharged.

Watershed: The drainage basin contributing water, organic matter, dissolved nutrients, and sediments to a stream or lake.

Watt: The common base unit of power in the metric system. One watt equals one joule per second, or the power developed in a circuit by a current of one ampere flowing through a potential difference of one volt. One Watt = 3.413 BTU/hr. See also kilowatt.

Wheeling: The process of transferring electrical energy between buyer and seller by way of an intermediate utility or utilities.

Whole-tree harvesting: A harvesting method in which the whole tree (above the stump) is removed.

Yarding: The initial movement of logs from the point of felling to a central loading area or landing.

Acronym Guide (AG)

ARM — Administrative Rules of Montana
ARMB — Air Resources Management Bureau (DEQ)
ASME — American Society of Mechanical Engineers
AST — Above-Ground Storage Tank Program
ATTB — Alcohol and Tobacco Tax and Trade Bureau (U.S. Dept. of Treasury)
BACT — Best Available Control Technology
BATF — Bureau of Alcohol Tobacco & Firearms (U.S. Dept. of Treasury)
BBER — Montana Bureau of Business and Economic Research, University of Montana
BCAP — Biomass Crop Assistance Program
BLM — U.S. Bureau of Land Management, Dept. of Interior
BMP — Pest Management Practices
BOD — Biological Oxygen Demand
BTU — British Thermal Unit
CCC — Commodity Credit Corporation
CESQGs — Conditionally Exempt Small Quantity Generators
CHP — Combined Heat and Power
COD — Chemical Oxygen Demand
DEQ — Department of Environmental Quality
DFWP — Department of Fish, Wildlife & Parks
DLI — Department of Labor & Industry
DNRC — Montana Dept. of Natural Resources and Conservation
DOA — Montana Dept. of Agriculture
DOE — Department of Energy
DOR — Department of Revenue
DPHHS — Department of Public Health & Human Services
EIS — Environmental Impact Statement
EPA — Environmental Protection Agency
FERC — Federal Energy Regulatory Commission
FSA — Farm Services Agency
HAPs — Hazardous Air Pollutants
HWP — Hazardous Waste Program (Waste & Underground Tank Mgmt. Bureau of DEQ)
IRS — Internal Revenue Service
ITC — Investment Tax Credit
LAER — Lowest Achievable Emission Rate
LUST — Leaking Underground Storage Tank
MACRS — Modified Accelerated Cost-Recovery System
MASS — Montana Agricultural Statistics Service
MCA — Montana Code Annotated
MCS — Motor Carrier Services
MDT — Montana Department of Transportation; Million Dry Tons
MFSA — Major Facility Siting Act
MGPCSP — Montana Groundwater Pollution Control System Permit
MPDESP — Montana Pollutant Discharge Elimination System Permit
MW — Megawatt

NAAQS — National Ambient Air Quality Standards
NOI — Notice of Intent
NOT — Notice of Termination
NSR — New Source Review
OAQPS — Office of Air Quality Planning and Standards
PFI — Pellet Fuels Institute
PSC — Public Service Commission
PSD — Potential for Significant Deterioration
PTC — Production Tax Credit
QF — Qualifying Facility
QECB — Qualified Energy Conservation Bond
REAP — Rural Energy for America Program
REPI — Renewable Energy Production Incentive
RFS — Renewable Fuel Standards
RIN — Renewable Identification Number
SIP — State Implementation Plan
SPCC — Spill Prevention, Control and Countermeasures Plan
SWS — Solid Waste Section (Dept. of Environmental Quality, Waste & Underground
Tank Mgmt. Bureau)
TSP — Total Suspended Particulates
USB — Universal System Benefits
USFS — U.S. Forest Service (Dept. of Agriculture)
UST — Underground Storage Tank
VOC — Volatile Organic Compounds
WQB — Water Quality Bureau (Dept. of Environmental Quality)

References and Selected Bibliography

- American Coalition for Ethanol, "Ethanol FAQs,"
<http://www.ethanol.org/index.php?id=81&parentid=25>, accessed August 11, 2009.
- Balsam, John and D. Ryan. 2006. *Anaerobic Digestion of Animal Wastes: Factors to Consider*, National Sustainable Agriculture Information Service.
<http://attra.ncat.org/attra-pub/anaerobic.html>.
- Bergman, J.W. 2006. MSU Eastern Agricultural Research Center, NDSU Williston Research Extension Center, 2006 Agricultural Research Update.
- Bergman, Jerry. July 2007. *Desirable Vegetable Oil Characteristics and Agronomic Aspects of Growing Safflower in Montana*.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/Bergman_Biolube_Feb07_GreatFalls_jbhh.pdf
- "Biodiesel Fuel: Transportation for the 21st Century," DOE Energy Efficiency and Renewable Energy (EERE), March 2001.
- "Bioheat® Fuel Frequently Asked Questions," National Biodiesel Board,
<http://www.biodiesel.org/markets/hom/faqs.asp>, accessed August 24, 2009.
- Cartwright, Marc. January 2008. *Juncea: An Oilseed Crop for the Northern High Plains*.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/02Juncea_Oil-seed_workshop_Jan08.pdf
- Contact List of Montana Biodiesel Permits, Licenses, and Other Considerations*.
November 2008.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/Biodiesel_Permits_License_Considerations_Nov2008.pdf
- Dana, Rich. July 2009. *Biodiesel: Do-it-yourself Production Basics*, National Sustainable Agriculture Information Service. <http://attra.ncat.org/attra-pub/biodiesel.html>.
- DeBoerer, Ken. January 2008. *Camelina Oilseeds and Biodiesel: On-Farm Whole Cycle Operation*. Department of Environmental Quality Oilseed & Biodiesel Workshop, Billings MT.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/03DeBoerer_Camelina_oilseeds_and_biodiesel.pdf
- Energy Future Coalition, "The Facts about Biofuels: Other Alcohols and Ethers."
http://www.energyfuturecoalition.org/biofuels/fact_alcohols_ethers.htm#2, accessed August 11, 2009.

Final Report: Biomass Boiler Market Assessment. October 2006. CTA Architects and Engineers, Christopher Allen & Associates, Montana Community Development Corp. and Geodata Services, Inc.
http://www.fuelsforschools.info/pdf/Final_Report_Biomass_Boiler_Market_Assessment.pdf

Haider, Jim. January 2008. *Montana Manufacturing Extension Center, Making Bioproducts Companies More Successful*. Montana Manufacturing Center: An MSU College of Engineering Center.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/25Haider_08MMEC_brief_introJan2008_biodiesel_workshop.pdf

Haines, Howard. January 9, 2008. *Introduction to Biodiesel & Oilseeds in Montana*. Oilseed & Biodiesel Workshop, Billings MT.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/01BD_HH_Billings_Intro_9Jan2008_web.pdf

Hascall, KJ. "One man's trash is another's electricity," *Daily Inter Lake*, June 28, 2009.
http://www.dailyinterlake.com/articles/2009/07/05/business_and_finance/local_montana/business_and_finance_8753833045_01.txt

Jackson, G., and J. Miller. 2005. *Effect of nitrogen, phosphorus and sulfur on yield, oil content, and oil quality of camelina*. <http://ag.montana.edu/wtarc/Web2005/Soils/Camalina/2005CamelinaNPS.pdf>

Jackson, G., and J. Miller. 2006. *Effect of nitrogen phosphorus and sulfur on camelina yield, oil content, oil quality, and nutrient content*. <http://ag.montana.edu/wtarc/Web2006/Soils/CamFert/CamelinaFertSummary2006xx.pdf>

Johnson, Duane. June 2006. *Crops for Biodiesel Research in Montana: Camelina*. Montana State University Montana Agricultural Experiment Station.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/Biolubricants_Duane_WMT_06_Livingston_9Jan2007_hh.pdf

Johnson, Duane. October 2007. *The Developing Camelina Industry in the Western United States*. Great Plains Oil & Exploration, Bigfork and Havre, Montana.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/Camelina_US_D_Johnson_pics_Oct2007_Polson.pdf

Kephart, K., G.B. Opena, D. Johnson. 2005. *Adaptation and evaluation of several oilseed species for potential biodiesel and biolubricant production in south central Montana*. 2005 Annual Report. <http://www.sarc.montana.edu/>

Kephart, K., G.B. Opena, D. Johnson. 2006. *Adaptation and evaluation of several oilseed species for potential biodiesel and biolubricant production in south central Montana*. 2006 Annual Report. <http://www.sarc.montana.edu/>

Kemp, William H. April 2006. *Biodiesel Basics and Beyond: A Comprehensive Guide to Production and Use for the Home and Farm*. Aztext Press.

Kurki, Al, M. Morris, A. Hill. December 2007. *Biodiesel: The Sustainability Dimensions*, National Sustainable Agriculture Information Service. http://attra.ncat.org/attra-pub/biodiesel_sustainable.html.

Kurki, Al, J. Bachmann, H. Hill. December 2008. *Oilseed Processing for Small-Scale Producers*. National Sustainable Agriculture Information Service. <http://attra.ncat.org/attra-pub/oilseed.html>.

Mehta, Aashish, January 2002. *The Economics and Feasibility of Electricity Generation Using Manure Digesters on Small and Mid-size Dairy Farms*. Department of Agricultural and Applied Economics Energy Analysis and Policy Program, University of Wisconsin – Madison.

McVay, K.A. Southern Agricultural Research Center, and Lamb, P.F., Northern Agricultural Research Center. Revised March 2008. *Camelina Production in Montana*. MSU Extension Service. <http://msuextension.org/publications/AgandNaturalResources/MT200701AG.pdf>

Montana Agricultural Statistics Service. *Canola Acreage, Yield, and Production by Counties and Districts, Montana, USA, 2008*, http://www.nass.usda.gov/Statistics_by_State/Montana/Publications/county/crops/2008/cancty08.htm. Accessed June 30, 2009.

Montana Department of Agriculture and DEQ. December 2008. February 2006. *Fuels for Schools and Beyond*. <http://dnrc.mt.gov/Forestry/Assistance/biomass/default.asp>

Montana Department of Natural Resources and Conservation. *Water Rights in Montana*, October 2008. <http://leg.mt.gov/content/Publications/environmental/2008waterrights.pdf>. Accessed August 4, 2009.

Morgan, Todd A. April, 2009. *An Assessment of Forest-Based Woody Biomass Supply and Use in Montana*. Forestry Assistance Bureau: Forestry Division. Montana Department of Natural Resources and Conservation. http://dnrc.mt.gov/forestry/Assistance/Biomass/Documents/MT_WoodyBiomassAssessment.pdf

Morgan, Todd. Bureau of Business and Economic Research, University of Montana, Missoula. Email correspondence, June 29, 2009.

Morris, Mike and A. Hill. December 2007. *Ethanol Opportunities and Questions*. National Sustainable Agriculture Information Service. <http://attra.ncat.org/attra-pub/ethanol.html>.

National Renewable Energy Laboratory (NREL) with the assistance of Janet Yanowitz of Ecoengineering, Inc., and Richard Nelson, Enersol Resources. Revised January 2009. *Biodiesel Handling and Use Guide: Fourth Edition*. U.S. Department of Energy Office of Energy Efficiency & Renewable Energy. <http://www.nrel.gov/docs/fy09osti/43672.pdf>

NREL, *A Geographic Perspective on the Current Biomass Resource Availability in the United States*, http://www.manta.com/mb_44_E019B_27/logging/montana. Accessed June 30, 2009.

“NRCS Funds Montana’s First Dairy Methane Digester,” Natural Resources Conservation Service. <http://www.mt.nrcs.usda.gov/news/projects/huls.html>, accessed August 12, 2009.

Potential for Expanding the Fuels for Schools Concept to Other Institutions and Industries. December 2004. Emergent Solutions, Christopher Allen & Associates, CTA Architects and Engineers, and Geodata Services, Inc. http://www.fuelsforschools.info/pdf/FFS_potential_for_expanding.pdf

Rawlings, Craig C. Small Wood Enterprise Agent, Montana Community Development Corporation, et al. December 2004. *A Study of How to Decrease the Costs of Collecting, Processing and Transporting Slash*. <http://dnrc.mt.gov/forestry/Assistance/Biomass/Pubs/Documents/Slashproctrans.pdf>

Repeal of Special (Occupational) Tax on Alcohol Occupations, U.S. Department of Treasury, Alcohol and Tobacco Tax and Trade Bureau, http://www.ttb.gov/tax_audit/fed_tax_stamp.shtml, accessed August 12, 2009

Schumacher, Joel. August 2007. *Biodiesel: Frequently Asked Questions*. Agricultural Marketing Policy Center, MSU Extension Service. <http://www.ampc.montana.edu/briefings/briefing89.pdf>

Schumacher, Joel. November 2006 (revised). *Oilseed, Biodiesel and Ethanol Subsidies & Renewable Energy Mandates: US Federal & Selected State Initiatives*. Agricultural Marketing Policy Center, MSU Extension Service. <http://www.ampc.montana.edu/policypaper/policy16.pdf>

Schumacher, Joel. September 2007. *Commercial Biodiesel Production in Montana*. Agricultural Marketing Policy Center, MSU Extension Service. <http://www.ampc.montana.edu/briefings/briefing91.pdf>

Schumacher, Joel. January 2008. *Economics of Small Scale Biodiesel Production*. MSU Extension Service: Bozeman, Montana. http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/05Schumacher_second_Economics_Billings_Jan_2008.pdf

Schumacher, Joel. November 2006. *Montana Oilseed Markets: Historical Price and Production Statistics*. Agricultural Marketing Policy Center. MSU Extension Service.
<http://www.ampc.montana.edu/policypaper/policy19.pdf>

Schumacher, Joel. May 2007. *Oilseed Processing: An Overview*. Agricultural Marketing Policy Center, MSU Extension Service.
<http://www.ampc.montana.edu/briefings/briefing86.pdf>

Schumacher, Joel. May 2007. *Small Scale Oilseed Processing*. Agricultural Marketing Policy Center, MSU Extension Service.

Schumacher, Joel. May 2007. *Large Scale Commercial Oilseed Processing*. Agricultural Marketing Policy Center, MSU Extension Service.
<http://www.ampc.montana.edu/briefings/briefing87.pdf>

Schumacher, Joel. November 2006 (revised). *Oilseed, Biodiesel and Ethanol Subsidies & Renewable Energy Mandates: US Federal & Selected State Initiatives*. Agricultural Marketing Policy Center, MSU Extension Service.
<http://www.ampc.montana.edu/policypaper/policy16.pdf>

Schumacher, Joel and Smith, Vincent. December 2007. *Feedstock Requirements for Large Scale 100 Million Gallon Biodiesel Production Facilities in Montana*. Agricultural Marketing Policy Center, MSU Extension Service.
<http://www.ampc.montana.edu/briefings/briefing92.pdf>

U.S. Environmental Protection Agency. *Market Opportunities for Biogas Recovery Systems*. http://www.epa.gov/agstar/pdf/biogas%20recovery%20systems_screenres.pdf

Van Gerpen, Jon, Rudy Pruszko, Davis Clements, Brent Shanks, and Gerhard Knothe. July 2006. *Building a Successful Biodiesel Business*, second edition.

Van Gerpen, Jon H. January 2008. *Biodiesel Economics*, USA Oilseeds and Biodiesel Workshop Billings, MT. Biological and Agricultural Engineering University of Idaho, Moscow, ID.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/11Montana_Economics_Billings_Jan2008_JVG.pdf

Van Gerpen, Jon H. January 2008. *Biodiesel Quality*. USA Oilseeds and Biodiesel Workshop Billings, MT. Biological and Agricultural Engineering University of Idaho, Moscow, ID.
http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/07Montana_Quality_Jan2008_JVP.pdf

Van Gerpen, Jon H. January 2008. *Biodiesel Use and Consumption*. USA Oilseeds and Biodiesel Workshop Billings, MT. Biological and Agricultural Engineering University of Idaho, Moscow, ID.

http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/06Montana_Use_Jan_2008_JVG.pdf

Van Gerpen, Jon H. January 2008. *Commercial Biodiesel Production*. USA Oilseeds and Biodiesel Workshop Billings, MT. Biological and Agricultural Engineering University of Idaho, Moscow, ID.

http://www.deq.state.mt.us/Energy/bioenergy/Biodiesel_Production_Educ_Presentations/10Montana_Production_Jan_2008_JVP.pdf

White, Jeff J. and James N. Carroll, Southwest Research Institute, Haines, Howard, Montana Department of Environmental Quality. 2008. *Emissions from Snowmobile Engines Using Bio-Based Fuels and Lubricants*. Helena MT.

<http://www.deq.state.mt.us/energy/bioenergy/biofuels.asp>

OTHER RESOURCES

Fuels for Schools and Beyond, Air Emission Test Reports

http://www.fuelsforschools.info/air_emission_test_reports.html

Fuels for Schools and Beyond, Case Studies

<http://www.fuelsforschools.info/projects.html#Case%20Studies>

Clean and Diversified Energy Initiative, Biomass Task Force Report, Western Governor's Association, Jan. 2006

<http://www.westgov.org/wga/initiatives/cdeac/Biomass-full.pdf>

Darby Fuels for Schools Annual Report, 2005-2006

http://www.fuelsforschools.info/pdf/Darby_FFS_Annual_Rpt_2005-2006.pdf

Establishing Long-Term Supply Agreements for Wood Energy Facilities, Empire State Forest Products Association, June 2008

http://www.na.fs.fed.us/pubs/werc/supply_agreements/wood_energy_facilities.pdf

Fuels for Schools: A Business Outlook, Jan. 2004,

http://www.fuelsforschools.info/pdf/business_outlook.pdf

Issue Brief: Food and Crop Waste: A Valuable Biomass Feedstock

http://www.eesi.org/040609_foodwaste

Montana Biomass Boiler Market Assessment, Oct. 2006

http://www.fuelsforschools.info/pdf/Final_Report_Biomass_Boiler_Market_Assessment.pdf

Potential for Expanding the Fuels for Schools Concept to Other Institutions and Industries in Montana, Dec. 2004

http://www.fuelsforschools.info/pdf/FFS_potential_for_expanding.pdf

Study of How to Decrease the Costs of Collecting, Processing and Transporting Slash
<http://dnrc.mt.gov/forestry/Assistance/Biomass/Pubs/Documents/Slashproctrans.pdf>

USFS Forest Products Lab: Wood for Energy-related Reports
http://www.fpl.fs.fed.us/tmu/wood_for_energy/wood_for_energy.html

Wood Heat Solutions: A Community Guide to Biomass Thermal Projects, Resource
Innovations, U of Oregon, Sept. 2008,
http://www.fuelsforschools.info/pdf/Resource_Innovations_biomass_guide9-11.pdf

Woody Biomass Removal Case Studies: Lessons Learned and Strategies for Success,
Forest Guild and USFS, Sept 2008
<http://biomass.forestguild.org/>

Woody Biomass Utilization Desk, USDA Forest Service, Sept. 2007
[http://www.forestsandrangelands.gov/Woody_Biomass/documents/biomass_deskguide.p
df](http://www.forestsandrangelands.gov/Woody_Biomass/documents/biomass_deskguide.pdf)