**PERMITTING PLAN**

The permitting plan identifies environmental and land use permits required (if any), provides key agency input, presents expected fees, and includes a recommended implementation schedule to secure permits. The permitting plan is based on application forms, prior experience of the project’s consulting team, and communication with representatives from permitting agencies.

It has been determined in this biomass study, given the low availability of woody biomass fuel in the region, that only biomass thermal systems are the appropriate technology for use in the Mammoth Lakes area. Specifically, preferred existing facilities in the Mammoth Lakes area that appear to have the technical and potential economic ability to replace their existing heating systems with a biomass boiler system have been identified include: the Mammoth Mountain Ski Resort, the Mammoth Hospital, and the Mammoth Middle School.

The installation of a biomass thermal system to replace an existing heating system does not require any additional land use entitlements. Thus, it has been determined that the only environmental permit required for a biomass thermal system would be an air quality permit from the Great Basin Unified Air Pollution Control District (GBAPCD).

**Air Quality Permitting**

Air quality permitting in the Mammoth Lakes region is under the jurisdiction of the GBUAPCD. The GBUAPCD enforces Federal, State, and local air quality regulations and to ensure that the federal and state air quality standards are met.

In consultation with the GBUAPCD, it has been determined that biomass thermal units operating within the District will require an air quality permit. There is an exemption in the GBUAPCD rules for steam generators, steam superheaters, water boilers, water heaters, and closed heat transfer systems that have a maximum heat input rate of less than 15 million British Thermal Units (Btu) per hour,[[1]](#footnote-1) however, these units must be fired exclusively with natural gas or liquefied petroleum gas or any combination thereof. Thermal units utilizing woody biomass must apply for, and obtain, an air quality permit. There is no minimal size level in the GBUAPCD regulations.

**Application Process**

The GBUAPCD requires that before an air pollutant emitting system is installed within the district, an Authority to Construct (ATC) permit must be obtained.[[2]](#footnote-2) The application process for a biomass fueled boiler system includes:

* Prepare GBUAPCD Authority to Construct Application – General Information Form (APCD – 004, see Attachment A) and the Fuel Burning Equipment Form (APCD – 008, see Attachment B) These application forms will require the following information:
* Permittee information and location of project;
* Type of application – a biomass boiler system at any location would be considered a new facility;
* Detailed description of facility and type of biomass fuel burning equipment;
* Description of process, configuration, emissions control equipment, and maximum air emissions quantity (such as particulate matter, carbon monoxide, organic gases, nitrogen oxides, and sulfur oxides).
* The GBUAPCD will review application for completeness and either issue applicant a determination letter or request additional information.
* Upon application completeness determination, GBUAPCD will prepare an engineering evaluation and draft permit.
* The draft permit will be circulated for a 30-day public review.
* Comments will be addressed and permit will be issued.

It is expected that a biomass-fueled boiler systems located at the sites identified in the Site Review and Analysis will have very low air pollutant emissions due to the relatively small size. Table 1 shows a 2.0 MMBtu per hour boiler operating at 70% efficiency and at an 18% capacity factor.

**Table 1. Example 2.0 MMBtu/Hour Biomass Boiler Emissions**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CO** | **NOx** | **SO2** | **PM\*** | **PM10\*** | **PM2.5\*** | **Lead** | **VOC** |
| Biomass Boiler[[3]](#footnote-3) [lb/MMBtu] | 0.6 | 0.22 | 0.025 | 0.22 | 0.20 | 0.12 | 0.000048 | 0.017 |
| Annual Emissions [Tons/Year] | 1.69 | 0.62 | 0.07 | 0.62 | 0.56 | 0.34 | 0.0001 | 0.05 |

\* Emission factor based on use of a multi-clone to reduce particulate matter

The emissions levels in Table 1 would typically result in relatively easy air quality permitting; however, the air toxics policy of the GBUAPCD adds challenges to permitting even small biomass-fueled boiler systems.

**Toxic Risk Assessment Policy**

The GBUAPCD adopted a Toxic Risk Assessment Policy in 1987. That policy guides how the GBUAPCD deals with air quality permit issuance when the proposed source emits Toxic Air Contaminants, as defined and listed by the California Air Resources Board and the U.S. EPA. The Toxic Risk Assessment Policy (Attachment C) states:

1.   Sources that emit Toxic Air Contaminants, as listed by the Air Resources Board or EPA must apply for a permit.

2.   A screening risk assessment will be performed by the District.  If the lifetime carcinogenic risk to the maximum exposed individual is less than or equal to one-in-one-million (1 x 10-6), a permit will be granted.  If the risk is greater than 1 x 10-6 the proponent will be required to do a formal risk assessment and an Environmental Impact Report.

3.   Proposed sources, which result in a carcinogenic risk of greater than 10 x 10-6, would be denied permits.  Proposed sources, which result in a carcinogenic risk between 1 x 10-6 and 10 x 10-6, may be issued a permit if appropriate mitigations are incorporated into the project.

The direct combustion of woody biomass in a thermal boiler system will result in the potential release of toxic air contaminants (various volatile and semi-volatile organic compounds, such as benzene, acrolein, and napthalene). To assess this potential, the GBUAPCD prepared a preliminary toxic risk assessment spreadsheet, which TSS has applied to the preferred sites in the Mammoth Lakes area where a biomass boiler system could be installed. The district’s preliminary toxic risk assessment spreadsheet calculates the chronic and acute risk due to emissions of a selected number of organic compounds considered by the California Air Resources Board and the California Office of Environmental Health Hazard Assessment (list of these compounds can be found in Attachment C). The purpose of this spreadsheet is to make a preliminary determination of what the carcinogenic risk to a maximum-exposed individual person might be. Distance to the receptor (typically a residence), size of biomass boiler system, and emission factors for the organic compounds (referenced from EPA’s AP-42 emission factors for wood combustion) are all factors used together to determine the potential carcinogenic risk.

TSS employed this preliminary risk assessment spreadsheet to the various preferred sites as indicated above. The results pose challenges in acquiring the air permits given the GBUPACD Toxic Risk Policy. Examples include:

* At the Mammoth Mountain Resort Maintenance building the biomass boiler would have to accept an air permit, which would place a limit on the number of hours it could operate. The hour limitation calculated would be higher than the biomass boiler is calculated to run on an annual hour basis (approximately 50% capacity factor).
* At potential sites in the town of Mammoth Lakes, such as the school and hospital, the immediate proximity of residences, result in carcinogenic risk factor exceeding 10 x 10-6  even with low operating hours. It would likely be necessary to install an expensive emissions control system to lower the subject organic compounds concentration levels to below the 10 x 10-6 level. And, unless the emission control system was able to lower the risk level to below the 1 x 10-6 GBUAPCD policy would require an Environmental Impact Report to be prepared. This would significantly increase the cost to installing the biomass boiler system.

**Air Permitting Fees**

Rule 301, Permit Fee Schedule 2 - Fuel Burning Equipment Schedule:  Any article, machine, equipment or other contrivance in which fuel is burned, with the exception of incinerators which are covered in Schedule 4, shall be assessed a permit fee based upon the design fuel consumption of the article, machine, equipment or other contrivance expressed in thousands of BTUs per hour, using gross heating values of the fuel, in accordance with the following schedule:

|  |  |  |
| --- | --- | --- |
| **Unit Size in British Thermal Units Per Hour\*** | **Initial ATC Permit Fee** | **Annual ATC Permit Fee** |
| Up to and including 150,000 | $80.00 | $65.00 |
| Greater than 150,000 but less than 400,000 | $157.00 | $129.00 |
| 400,000 or greater but less than 650,000 | $320.00 | $129.00 |
| 650,000 or greater but less than 1.5 MM | $805.00 | $383.00 |
| 1.5 MM or greater but less than 5 MM | $1,273.00 | $517.00 |
| 5 MM or greater but less than 15 MM | $1,687.00 | $779.00 |

**\***This fee schedule only includes units not exceeding 15MMBtu/hour as no single system in the Mammoth Lakes area is expected to exceed that size.

**Permitting Schedule**

Once an ATC application is submitted to the GBUAPCD, the district has 30 days to determine if the application is complete, (all of the necessary information for the district to conduct an engineering evaluation is contained in the application package). If not, the district will request additional information to make their completeness determination. This additional information request will restart a 30-day review period. Once the application is deemed complete, the district has up to 180 days to issue the permit. However, the time to actually conduct the engineering evaluation and prepare the permit for issuance can be much less than 210 days.

**Findings**

The installation of a biomass thermal system to replace an existing heating system does not require any additional land use entitlements. Thus, it has been determined that the only environmental permit required for a biomass thermal system would be an air quality permit from the GBUAPCD.

It is expected that a biomass-fueled boiler systems in the Mammoth Lakes area and at the preferred sites previously identified will have very low air pollutant emissions due to the relatively small size (see Table 1 above).

The direct combustion of woody biomass in a thermal boiler system will result in the potential release of toxic air contaminants. The release of toxic air contaminants is governed by GBUAPCD policy, which will present challenges to the siting of biomass thermal units at certain sites within the Mammoth Lakes area, particularly those near residential dwelling units. The Mammoth Mountain Ski Resort Maintenance building is remote enough from sensitive receptors that the GBUAPCD Toxic Risk Assessment Policy has relatively small effect on siting a biomass thermal unit at that location.

1. GBUAPCD Rule 201 F. [↑](#footnote-ref-1)
2. GBUAPCD Rule 200 [↑](#footnote-ref-2)
3. Environmental Protection Agency, AP-42: Chapter 1, Section 6 [↑](#footnote-ref-3)