

### Acknowledgments

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# Summary

Air permitting is a challenging task encountered when installing a Combined Heat and Power (CHP) system. One of the foremost reasons is that there is little consistency in how to accomplish it, or what will be required. In addition, the Federal Clean Air Act is one of the most complicated components of the Code of Federal Regulations. Each state is allowed discretion for air quality in their jurisdiction, as long as their regulations are as stringent as the federal ones. Some states have chosen to promulgate regulations that are substantially more stringent than the federal standards. Also some states have not only passed such stringent state programs, but have also divided their state into subdivisions, each with different requirements. An example of this is California, which is divided into 35 air districts, each of which has its own regulations. The California air district requirements are different enough from each other that they are often unrecognizable as having come from the same state.

In addition, terminology can vary among the different agencies. To some, the initial permit is a "Permit to Construct," for others an "Authority to Construct," and for others an "Approval Order," etc. Some agencies use the term Volatile Organic Compounds (VOC) to describe the organic gases that act as precursors to ozone formation in the atmosphere, other agencies call them Non-Methane Hydrocarbons(NMHC), and others, Precursor Organic Compounds(POC). Innumerable examples of terminology confusion exist. This document uses the terms that are most commonly encountered across the country. The application of the appropriate terms within a particular agency may be confusing at first, but once the concepts are clear, the terminology will follow.

# **Air Quality Requirements**

Air quality requirements can be divided into three categories: Administrative, Performance Standards, and Permitting. Each is independently applicable and an exemption from one is not necessarily an exemption from all.

- 1. Administrative requirements include such topics as enforcement procedures, organizational structure and procedures, etc. They are always applicable and will not be discussed further in this fact sheet.
- Performance Standards include local requirements which may also be called "prohibitory rules" as well as the federal New Source Performance Standards (NSPS) and the National Emission Standards for Hazardous Air Pollutants (NESHAP). These requirements apply to certain types of

facilities, equipment, or processes regardless of their permitting status. Applicability is quite variable, some requirements apply regardless of when a source was installed and some apply only to sources installed after a certain date. Some requirements impose more stringent requirements on existing sources and under some existing sources are not required to comply with revised limitations. Some requirements apply to sources at facilities that are classified as Major Sources and some apply to sources regardless of the facility categorization. The requirements may also specify emission limits, equipment configuration, fuel specifications, etc.

- Permitting requirements generally require a permit application to be submitted and approved by the agency prior to beginning construction of an air emissions source. Permits can be categorized by facility emission levels:
  - Exempt: Facilities with emissions below specific thresholds may be exempt from permitting. Specific types of facilities or equipment may also be exempt.
  - Minor Source: Facilities between the exemption threshold and the Major Source threshold are permitted exclusively under authority of the local agency as Minor Sources. These permits may have reduced requirements for their permit applications. Smaller wastewater treatment plants will likely be in this category.
  - Major Source: Also called Federal Operating Permits or Title V Permits, these are large facilities with substantial emissions. Larger wastewater treatment plants may be in this category. These permits have Federal requirements as well as local requirements and are subject to review by the EPA.
  - Prevention of Significant Deterioration (PSD): These are the largest facilities in the country and these permits are very difficult and time consuming to acquire. Many state or local jurisdictions do not have approval to issue PSD permits and they must be issued by EPA. Wastewater treatment plants should not be in this category. A large coal-fired power plant is an example of a PSD facility.

## **Air Permitting Process**

At a high level, the process of acquiring an air permit is nearly the same in all jurisdictions. Generally, a permit application must be prepared and submitted, it is reviewed by the permitting agency, and in some cases, it requires review by the public. Following all reviews, a permit is either granted or denied. In many jurisdictions, a temporary permit is granted that authorizes construction. After construction is complete and the facility is assured to function as permitted, a final permit is issued.

An important consideration when beginning a permitting process is development of a permitting strategy. This strategy should consider all aspects of the permitting process as described in more detail below. One of the most important elements, however, is agency interaction. The ultimate goals of agency interaction are to make the permitting process move as smoothly as possible and to minimize the number of requirements imposed on the permit. It is important to consider what opportunities are available for agency interaction, the specific goals of each interaction, and how to approach the agency, both generally and specifically at each interaction.

### Permit Application

Applications for a permit, while variable across local agencies, contain common sections:

- Project Description This is an important section in which the applicant can describe what they are proposing in a way that may make it easier or harder to permit. The person writing this section should be familiar with air quality regulations so that they avoid triggering additional requirements simply by virtue of the project description. Usually, a simple process flow diagram and various location maps are required.
- Emission Estimates Agencies always want to know the projected quantity of emissions the project will produce and whether or not individual sources or the facility as a whole will trigger certain thresholds that would result in additional requirements. Emission estimates may be required at anticipated operating rates or may be "potential to emit" estimates that assume maximum production rates and maximum operating times, depending on their application.
- BACT Analysis Best Available Control Technology (BACT) is a permitting requirement that often becomes the most stringent requirement applied to a specific source. In concept, it applies increasingly stringent emission limitations over time by requiring the most stringent emission limitation that is technically and financially feasible. It has a rigid evaluation procedure to determine what emission limitation will apply each time something is permitted. It differs from performance standards in that it applies only at the time of permitting, not at any later time. Implementation is where the variability and uncertainty arises. BACT in California is not the same as BACT in Utah or BACT in Texas because the agencies interpret the

program in different ways and because the interpretation of financial feasibility is different in different locations.

- Air Dispersion Modeling Modeling is also an area where there is some uncertainty. Conceptually, there should be a minimum of uncertainty, but implementation by local agencies introduces uncertainty. Modeling today is not performed as often as it was historically. It may be used to assure that emissions from a particular facility do not cause an exceedance of the National Ambient Air Quality Standards or as input to a risk assessment to assess potential levels of hazardous air pollutant emissions. Modeling introduces numerous uncertainties including:
  - Model selection The US Environmental Protection Agency (EPA) certifies models for use in air dispersion modeling. The current certified model for most modeling applications is AERMOD, which has a simpler screening model with the name AERSCREEN. These are more complex and resource intensive than the previous models ISC and SCREEN3. Which were decertified at the time AERMOD was certified. Some agencies continue to use ISC except for those occasions where the EPA has to review the results.
  - Meteorological Data The models require meteorological data representative of the location. Seldom is there a meteorological station in the immediate vicinity of the facilities at a WRRF. More often, a judgment must be made regarding which meteorological station is actually the most representative of the WRRF location.
  - Type of Source Sources come in many configurations. The models allow a choice of types: point sources, area sources, and volume sources. Each source type is treated differently in the model. Specific sources do not always fit cleanly within a particular type.
- Hazardous Air Pollutants Agencies regulate hazardous air pollutants differently. Some treat the regulation of hazardous air pollutants the way Federal regulations do, in a command and control structure. The NESHAPs are a good example of this structure. Some local agencies evaluate hazardous air pollutants using a human health risk assessment. When specific risk thresholds are exceeded, certain actions must be taken.
- Regulatory Compliance This is often an optional section of the application, except for Title V applications. It is an opportunity for the applicant to specify the requirements that they believe apply and those that do not. This should spark discussion with the agency should they disagree. It is particularly important with regard to performance standards, especially when there are alternative

compliance strategies available. In addition, this section is helpful after the permit is issued because it compiles in one location all of the requirements with which compliance is needed.

- Proposed Permit Conditions Occasionally, there are reasons to propose specific wording for proposed permit conditions. However, the applicant should take care not to propose permit conditions that otherwise might not be imposed.
- Emission Offsets In some jurisdictions, emissions must be offset with emission credits from an established emission bank. In those jurisdictions, some facilities already own credits which may be provided to the agency. In other cases, credits must be purchased from a third party. The cost is negotiated directly between the buyer and seller.
- Fees Permit fees vary greatly among jurisdictions and depend on the sources included in the application. Fees can range from hundreds of dollars to tens of thousands of dollars.

#### Post Application Submittal

Once the application is submitted, the focus of the permitting process shifts to the agency. It is the agency's responsibility to review and either approve or deny the permit. In some jurisdictions, a public review period is also required. Finally, a few jurisdictions have a requirement to complete an environmental impact review before issuing a permit. However, that aspect of the process is not discussed herein.

Agency review - The agency may perform two types of reviews: completeness and technical. A completeness review, where it is performed, is for the sole purpose of determining whether or not all information is contained in the permit application that the agency will need to make a decision on the application. Completeness reviews are most common where the agency has a statutory limit on the amount of review time that they are allowed. In that case, the completeness review will be outside that time limit. If information is lacking, it will be requested. If not, the agency will deem the application completed and move into the technical review phase. In a technical review, the agency is assessing whether the sources being proposed meet applicable regulatory limitations and determine what additional limitations should be imposed as permit conditions in order to assure that the sources are operated in the manner described in the application. The result of the agency review is usually an engineering analysis and recommendation either to issue the permit, with or without certain conditions, or to deny the permit. At that point, the agency management may take action on the application if public review is not required, or submit the application and analysis for public review if required.

- Public review Public review is ordinarily required when members of the public could be directly impacted by a project, although some jurisdictions have general requirements for public review. A public notification is made, usually by publishing a notice in a local paper and often supplemented with email notifications to agency mailing lists. Occasionally, notice is more direct with mailings to each address in the area. When a public school is located in the zone of potential impact, notices are sometimes sent home with students. The public is given a set period of time to review (usually 30 days, occasionally 60 days) and submit comments if they wish. Not commenting is interpreted as approval. After the comment period has closed, the agency will review the comments that they have received and will take one of three actions: approve the permit as originally recommended, issue a modified permit, or deny the permit, unless it is a Title V permit or another type of permit requiring EPA review.
- EPA review EPA must be given the opportunity to review all Title V permits. In addition, some state programs provide for EPA review of other types of air permits. PSD permits in particular are almost always reviewed by EPA. In fact, many state programs exclude PSD permits from the program, in which case, they must be issued by EPA. EPA's permitting program is very similar to that described herein, although the requirements for a PSD permit are much more stringent and complex than for other permits.

### **Additional Resources**

- <u>National Biosolids Partnership</u>
- Water Environment Federation
- Enabling the Future: Advancing Resource Recovery from Biosolids, WEF, 2013.
- Solids Process Design and Management, WEF Press, 2012.
- Combined Heat and Power Installation Database, U.S. DOE
- <u>CHP Deployment</u>, U.S. DOE
- <u>CHP Policies and incentives database</u> (dCHPP), U.S. EPA
- <u>CHP Resources</u>, U.S. EPA
- Combined Heat and Power Partnership, U.S. EPA

For further Biosolids information, please see http://www.biosolids.org.

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