

# AIR PERMITTING: PBR/SP/NSR/FNSR

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## BACKGROUND:

### AIR PERMITTING PROCESS

**TO MANAGE AIR QUALITY ACROSS THE U.S., CONGRESS PASSED THE CLEAN AIR ACT IN 1970, WHICH SET FORTH CRITERIA FOR SEVERAL POLLUTANTS IN THE ATMOSPHERE IN THE FORM OF NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS). TO MANAGE AIR QUALITY IN TEXAS, THE STATE PROMULGATED THE TEXAS CLEAN AIR ACT IN THE TEXAS HEALTH AND SAFETY CODE, WHICH REQUIRES AUTHORIZATION FOR ALL CONSTRUCTION IN SUPPORT OF ACTIVITIES THAT WOULD RESULT IN THE RELEASE OF AN AIR CONTAMINANT.**

The Texas definition of air contaminant is very broad and includes more than the criteria NAAQS pollutants. All stationary sources of air contaminants must engage with the State at some level to authorize or document authorization of their construction activities unless the stationary source can be found on the Texas Commission on Environmental Quality's (TCEQ's) list of de minimis facilities. The de minimis facilities include things like laundromats and pet shops, not chemical manufacturing facilities or refineries. Sage helps industrial facilities determine what kind of authorization they need for their construction project, as well as obtain and live with that authorization.

## SAGE'S COMPLIANCE APPROACH:

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#### **PERMIT-BY-RULE (PBR)**

Knowing that the air permitting process is often complex and lengthy, the State has pre-determined that natural air resources are not threatened by certain types of small-scope construction projects, and has stream lined the authorization process for such projects via its permit-by-rule program (formerly referred to as standard exemptions prior to being codified). The activities authorized by permit-by-rule (PBR) are found in 30 Texas Administrative Code (TAC) Chapter 106, and include requirements for activities such as installing a refrigeration system or storing organic liquids with > 300 °F boiling point.

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The intent of PBRs is to allow plant operations to carry out numerous small-scope changes without waiting on agency approval—and without overwhelming the agency with reviews. In general, it is advantageous to say that a PBR covers a proposed project; however, a given PBR still has general conditions to follow, as well as general emission limits in §106.4. Sage offers an opinion on whether the activity qualifies for the PBR; we can also find an applicable PBR for the activity if the plant isn't sure where to start.

**Emission Calculations**

The information required to claim a PBR is usually satisfied by a brief description of the project that includes any new equipment to be constructed or changes to existing facilities. To be sure of the appropriate air authorization mechanism, it is often required that emissions be calculated first, as distinctions in permitting mechanisms are driven by predicted emissions levels. Sage has developed spreadsheets for calculating the emissions expected at various types of facilities using the most current methodologies.

There are different methodologies used to calculate emissions. For instance, the TCEQ Air Permits Division still allows tank emissions to be estimated with EPA's TANKS 4.09d, but may shift to TanksESP to align with what the State Emissions Inventory (EI) now prescribes as guidance. Sage calculates the emissions in TANKS or ESP. At the PBR level, probably the most commonly authorized emissions are from equipment fugitive leaks. To estimate these emissions, Sage works with facilities to determine the number of new or modified fugitive components and determines what kind of monitoring plan is required, such as a Leak Detection and Repair (LDAR) service.

**Recordkeeping**

There are varying levels of recordkeeping involved with PBRs. At the minimum, a plant should prepare a note-to-file for unregistered (or claimed) PBRs for documentation reasons, such as ease of demonstration in an inspection or internal audit situation. Sage prepares this documentation, which usually consists of the emission calculations, a listing of the PBR requirements, and how the project meets the applicable requirements. Since this sort of documentation is for the site's purposes, it is tailored to the site's needs. The PBR may need to be rolled into an NSR permit at some point, so it may make sense to include additional information like control technology discussions as necessary.

**Registration**

Some PBRs require registration timed with the activity, while others require a notification. Many plants submit PBR notifications to TCEQ whether or not the claimed PBR requires notification. A submittal to the agency usually consists of a process description, a project description, an area map, a plot plan, a Core Data form, a PI-7 form, various standardized checklists, a copy of the PBR, a line-by-line description of how the project meets each requirement of the PBR, and the supporting emission calculations. Sage develops each of these components for the site in a format familiar to TCEQ and submits the document. TCEQ reviews registrations and sometimes asks additional questions. Sage is familiar with the kinds of representations TCEQ is looking for and deals directly with the agency to prevent hang-ups in the registration process. Through years of experience, many of Sage's permitting staff have strong relationships with agency staff which also helps in facilitating the issuance of the permit.

**Managing PBRs**

The most widely used PBRs are §106.261 and §106.262, due to their general coverage (they authorize "facilities" and "changes to facilities" not covered by the other PBRs). These PBRs have restrictive limitations for some compounds and require the plant to determine its nearest off-property inhabited building (or receptor). However, they offer a high degree of flexibility.

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Many day-to-day operational changes, such as repairs to piping, fall within the requirements 261/262. However, a site with multiple levels of authorizations must be conscientious about their use. The language in 261/262 is somewhat ambiguous given that the word "facility" means various things in the TAC. The use of these and other PBRs at a site that operates under existing permits has the potential to create the misperception that the change should have been authorized as a change to the permit rather than a PBR.

Because air pollution rules are complex and the regulatory authorities are subject to political shifts, it is important to have a permitting strategy that is both legal and convincing. Sage offers advice on the management of PBRs, including their incorporation into New Source Review (NSR) permits. This takes place in the form of formal documents containing the authorization strategy, conference calls, in-person meetings, or training for environmental staff.

### **STANDARD PERMIT (SP)**

The next level of permitting is the Standard Permit (SP). SPs are authorized in 30 TAC Chapter 116, Subchapter E, but are most easily found in rule packages on the TCEQ website. Like PBRs, the language in SPs is pre-determined and designed to streamline the authorization process. The major difference between PBRs and SPs is that SPs require Best Available Control Technology (BACT) to be installed for new and modified sources associated with the project to be authorized. The kind of information required in an SP registration includes air emission calculations, chemicals handled, process descriptions, and administrative information. It does not include the more complex demonstrations such as modeling, rule applicability, or control evaluations.

#### **Pollution Control Project SP**

Generally, SPs must be registered prior to construction. Many new pollution controls can be authorized by PBRs, but the Pollution Control Project (PCP) SP is still used with some frequency. The PCP SP allows companies to substitute one form of emission control with a more efficient form of control (even a change that results in cleaner air with no corresponding increase in production requires engagement with the TCEQ). The advantage of this SP is that it is usually approved within 45 days and documents reductions that can later come in handy.

Other commonly used Standard Permits include the new Oil & Gas Standard Permit which authorizes many of the emissions sources commonly related to the upstream and midstream Oil & Gas operations and the Boiler Standard Permit which authorizes new boilers with a design capacity greater than 40 MMBtu/hr.

### **INDIVIDUAL PERMIT: NSR/FNSR**

Moving from day-to-day construction for adjustments to plans and maintenance schedules that are covered by PBR/SP to more substantial changes that require a New Source Review (NSR) permit issued under 30 TAC 116 Subchapter B is not a hard line. In general, however, large capital expenditure projects require individual NSR permits. New plants, new processing units at plants, and considerable production increases at plants are expected to demonstrate to the State, on a more case-by-case basis, that the appropriate control technology is applied, that all air regulations are complied with, that the NAAQS is protected, and that human health and welfare is protected. If any project,

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regardless of its complexity, is determined to be subject to a Federal New Source Review (FNSR), then the project must be authorized under this section.

**Federal New Source Review (FNSR)**

FNSR differs from a minor state NSR in its higher cost, higher scrutiny on modeling demonstrations, wider timeline, and chance of duplicative pushback from regulatory authorities. For instance, BACT for a small maintenance event that was agreed to after lengthy negotiations with TCEQ may be questioned again by EPA during its review. This outcome in the process increases an already significant timeframe to obtain authorization. The Texas NSR or FNSR permit must be issued before the company breaks ground on a new project. Due to timeframe issues, it is important to develop the permitting strategy early in the development of a capital project. For minor NSR review, many companies find it advantageous to aim for a concise, convincing federal applicability demonstration.

**Applicability Analysis**

Because of EPA's recently heightened oversight of Texas' air permitting program, a strong federal applicability analysis—be it in an attainment or nonattainment area—is more important than ever. Sage's expertise when it comes to assisting or completing this analysis is very useful. Sage determines an appropriate baseline window from which to compare proposed allowables. This data typically comes from information submitted to TCEQ for Emissions Inventory (EI) reporting.

Upstream/downstream effects of a project must be considered in the FNSR applicability analysis. For example, while construction may be proposed in only one reactor line, actual emissions from loading and storage or other affected reactor lines may need to be included in the analysis. For much larger and more integrated processes such as a refinery, the TCEQ has come to expect a detailed discussion of upstream/downstream effects for all projects. Sage works with customers to develop a discussion of sufficient detail without making representations that limit engineering operations. Sage also navigates the netting process if thresholds are exceeded and develops projected future actuals that ameliorate the difference between actuals and permitted allowables for units whose allowables do not need to change.

**Emission Control Technology**

Another significant step in the permitting process is the selection of emission control technology. For minor NSR and PSD review, Best Available Control Technology (BACT) must be presented and evaluated; for Non-Attainment New Source Review, it is the Lowest Achievable Emission Rate (LAER).

When it comes to control, companies generally want to comply with requirements without investing extra funds on fledgling technology. The TCEQ, emission control vendors, and regulated entities exist in the same space that has changed over time. For example, since 1990, the lb NO<sub>x</sub>/MMBtu specification of new heaters and boilers has gone down dramatically based on advances in technology and persistent vendor interaction with the TCEQ. Once the agency is persuaded that new control technology is reliable and economical, it makes that technology Tier I BACT as guidance and expects all new projects to employ that technology or demonstrate why something less stringent is warranted.

With a capital project, the company often has its own interaction with vendors and is aware of what works best for their processes. Sage often assists customers with BACT evaluations including having direct interaction with vendors and plant engineering staff. Sage also provides input to the company during design phases on what TCEQ expects for certain emissions, what the requirements from federal and state regulations are, and certain advantages conferred from emissions reductions for

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federal applicability purposes. This takes place in the form of formal documents, conference calls, or in-person meetings. When the company selects a control option, Sage makes a convincing case to the TCEQ that the control option selected meets BACT, whether through reminding TCEQ of its own guidance, providing cost analysis, or offering other case-by-case considerations.

### **Rule Applicability**

Tied to the selection of control technology and monitoring methods is a determination of applicable rules. Of course, the regulated entity is aware of its applicable rules, but Sage keeps up with applicability changes when examining changes in the permitting process—and there is a lot to keep track of. Sage also provides a variety of other services, from complete applicability determination to setting up compliance systems.

In obtaining an NSR or FNSR permit, facilities must make a convincing case that all applicable requirements will be complied with, including requirements from NSPS, MACT, or state SIP (e.g., 30 TAC Chapters 111, 115 and 117). During the permit negotiation, the TCEQ adds requirements to the permit, which, if incorporated into a Title V permit at Title V major sources, will become federal requirements. Previously, permit conditions were given based on the relationship between operational parameters and modeled impacts. The trend now is toward long, generic requirements given for each emission unit, including those that are rolled into a NSR permit from a PBR. Sage negotiates with the agency on the conditions of a permit prior to its issuance.

### **Applying for a Permit: Process**

There are many steps involved in applying for a Chapter 116 permit from the TCEQ for a project. Sage facilitates the process by providing a complete application to the TCEQ that contains a description of the process/project and any upstream/downstream effects, emission calculations, federal applicability analysis, control technology evaluation, rule applicability discussion, and technical documentation. Technical documentation includes equipment tables, which Sage works with the company or the vendor to fill out, as well as Table 1(a), which includes the emissions and dispersion parameters, and netting tables. Sage typically prepares these in a suite of linked spreadsheets. As the engineers change details over the course of the permitting process, it is easy to update particular details and allow the changes to flow through the other analyses.

The application also contains a plethora of administrative information which Sage prepares and updates, as necessary. If a project has a particularly sensitive timeline, Sage arranges a kick-off meeting with the TCEQ and the facility to communicate the importance of the project and advance the review by explaining technical aspects to the reviewer and management prior to commencing the review.

### **Atmospheric Air Dispersion Modeling**

The step in the permitting process requiring the most specialized expertise is atmospheric air dispersion modeling. The trigger for modeling and the extent of modeling is determined during the permit application review, though Sage offers upfront advice on what level is likely required, sets up preliminary modeling to locate culpable sources, tamps down overly conservative rates, and even suggests new control options if necessary, in addition to preparing and submitting the analysis. If simple EPA SCREEN3 modeling does not suffice, Sage conducts refined complex air dispersion modeling by setting up inputs in ISC or AERMOD and providing the outputs to TCEQ for their audit of the application. The TCEQ will not approve any projects that do not demonstrate acceptability with NAAQS and Effective Screen Level (ESL) guidelines.

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**Permit Maintenance**

Following issuance of the permit for a unit, plant, or facility, some maintenance of the permit is required for as long as the permit holder would like to retain authorization for activities represented by the permit. NSR permits generally have to be renewed on a 10-year basis. BACT demonstration is usually not required in a permit renewal; however, the agency evaluates whether the monitoring required by the permit meets its idea of periodic monitoring (PM) or compliance assurance monitoring (CAM), and may ask for additional monitoring whether or not the site is subject to Title V.

Permit renewals can be used to revise permit representations to cover as-built construction changes, make corrections, update emission calculations to the most recent methodology, or align better with future permitting actions. It is recommended, however, that representations are updated more frequently than every ten years. It is not unusual to need minor updates or corrections to representations since the estimations made in the permit process sometimes occur well in advance of the finalization of all construction details. Sage determines whether changes in representations, future construction, or operation will trigger an alteration or amendment to the permit.

Over time, TCEQ has become more judgmental of the alteration process, and Sage determines whether an alteration will be met by citing experience or by engaging the agency with the company's information or anonymously. Another mechanism to authorize changes is to file a notification of change to qualified facilities under Senate Bill (SB) 1126. The SB 1126 program has been plagued by controversy but is still "on the books" and may soon be in Texas' EPA-approved SIP. Sage provides an analysis of the authorization options to help facilities choose based on budget, timeline, risk, and integration with other requirements.

**Greenhouse Gas**

Although greenhouse gas permitting is new territory and many questions remain as to how CO<sub>2</sub>e will be treated within the framework of other criteria and other non-criteria pollutants, over 30 applications have been received by EPA Region VI for GHG PSD permits. Sage has completed 4 of those applications. The thresholds for GHG PSD permitting are different than the thresholds for other PSD pollutants; however, many of the permitting requirements are similar in terms of estimating emissions and demonstrating BACT. Sage prepares and submits materials similar to a TCEQ application for the GHG application to EPA, benchmarks strategy against other submitted applications, or simply documents CO<sub>2</sub>e emissions from a project if they do not trigger permitting.

**SUMMARY:**

SAGE'S  
APPROACH TO  
AIR PERMITTING

The federal and state air permit authorization mechanisms for new facilities and changes to existing facilities have become labyrinthine over time. Moving through the labyrinth to the right mechanism is key to surviving scrutiny and obtaining a timely permit and one with minimized control costs. Sage's services range from producing technical documents for permitting strategy for a customer's internal use; to participating in meetings and offering training about strategy; to documenting PBR authorizations, reductions, rule applicability changes; to preparing, submitting, and following through with permit applications; to revising current permits to align better with ongoing permitting strategy. In this way, Sage is a useful knowledge base for environmental staff interested in good long-term permitting.