How to Measure Shortest Distances for the Oil and Gas PBR and Standard Permit

Why do I need to measure the shortest distances?

Shortest distances are required as part of demonstration of compliance with the requirements of the oil and gas rules, including demonstration of compliance with impacts.

How is the shortest distance measured?

The distance from an emission point to a property line or receptor is determined by measuring the straight-line distance from the nearest emission release point on the facility to the nearest property line or to the nearest point on the offsite receptor. Whether the distance measured is to the nearest property line or to the nearest offsite receptor is determined based on if the standard is a property line standard or an effects screening levels (ESLs) standard.

Compliance with any of the ambient air quality standards is determined on a contaminant-by-contaminant review, specifically nitrogen oxides (NO_X), sulfur dioxide (SO_2), and hydrogen sulfide (H_2S). Compliance with any of the ESLs standards is determined on a contaminant-by-contaminant review, specifically benzene.

The most conservative method to demonstrate compliance is to base the sitewide emissions for a particular contaminant on the facility closest to the property line or offsite receptor. Compliance may also be demonstrated by using weighted ratios of the emissions of a particular contaminant among the various emission sources with that contaminant and using the distance to the nearest property line or offsite receptor to each emission point.

What is the shortest distance for addressing effects screening levels (ESLs) impacts?

The shortest distance for addressing ESLs impacts is the distance from any emission release point, vent, or fugitive component to the nearest point on the receptor. The following is the definition of a receptor and the definition of a facility and are based on the definitions in the oil and gas rules:

- A receptor includes any building, which is in use as a single or multi-family residence, school, day-care, hospital, business, or place of worship at the time this section is registered. A residence is a structure primarily used as a permanent dwelling. A business is a structure that is occupied for at least 8 hours a day, 5 days a week, and does not include businesses that are handling or processing oil and gas materials. A receptor does not include structures occupied or used solely by the owner or operator of the OGS facility, or the mineral rights owner of the property upon which the OGS facility is located.
- A facility is a discrete or identifiable structure, device, item, equipment, or enclosure that constitutes or contains a stationary source. Stationary sources associated with a mine, quarry, or well test lasting less than 72 hours are not considered facilities.

What is the shortest distance for addressing ambient air quality impacts?

The shortest distance for addressing ambient air quality impacts is the distance from any emission point, vent, or fugitive component to the nearest property line. In general, ownership or

control of surface property, surface rights, or surface lease agreements, etc., are considered for determining the location of a property line. The property line is determined based on the physical area of land that the owner or operator has purchased or leased. For example, a physical barrier (e.g., a fence) is not necessarily the location of a property line if the land purchased or leased extends beyond the fence.

Which air pollutants need to be included in an impacts review?

Impacts need to be reviewed for benzene, NO_X, SO_2, and H_2S emissions.

Both hourly and annual ESLs impacts need to be addressed for benzene emissions. The hourly and annual ESLs for benzene are 170 micrograms per cubic meter ($\mu g/m^3$) and 4.5 $\mu g/m^3$, respectively.

Hourly ambient air quality standards impacts need to be addressed for NO_X, SO_2, and H_2S emissions. The federal hourly ambient air quality standard for NO_X is 188 $\mu g/m^3$. The federal hourly ambient air quality standard for SO_2 is 196 $\mu g/m^3$. The state hourly ambient air quality standard for H_2S is 108 $\mu g/m^3$.

Additional details about ESLs and ambient air quality standards can be found in the background document for the oil and gas standard permit, effective date February 27, 2011 (available at: http://www.tceq.texas.gov/assets/public/legal/rules/rule_lib/adoptions/OGS%20Standard%20Permit_ado.pdf)

Do I always have to know shortest distances?

No, there are certain exceptions in the oil and gas rules for when you do not need to know the shortest distance.

- If the project emissions are less than what is listed below, then you do not need to measure the shortest distance:
  - Benzene emissions <0.039 lb/hr; H_2S emissions <0.025 lb/hr; SO_2 emissions <2 lb/hr; and NO_X emissions <4 lb/hr.
- A project's maximum predicted concentrations for benzene are equal to or less than 10% of the ESLs for benzene.
- A project's maximum predicted concentrations for benzene combined with the project increases (previous maximum predicted concentrations) for benzene over a 60-month period after February 27, 2011, are equal to or less than 25% of the ESLs for benzene.
- For only the PBR, a project's maximum predicted concentration of NO_X or SO_2 is equal to or less than the significant impact level. (SIL, also known as *de minimis* impact; the SIL for NO_X is 10 $\mu g/m^3$; the SIL for SO_2 is 7.8 $\mu g/m^3$; there is no SIL for H_2S.)
- For only the standard permit, a project's maximum predicted concentration of NO_X or SO_2 is equal to or less than 10% of the SIL.

Are mineral rights (subsurface) included in the determination of shortest distances?

No. The shortest distances are based on what is on the surface. Surface rights, which are who has surface control and ownership will be used for determining distances to property line and receptors, not mineral rights (which are subsurface control and ownership). Please contact the Railroad Commission of Texas (RRC) if you have questions about subsurface mineral rights. (Web link for contacting the RRC: http://www.rrc.state.tx.us/contact/index.php)

Here is an example:

An oil and gas site has the following facilities and shortest distances:

- Fugitive components in VOC service which includes benzene.
- One natural gas-fired compressor engine which generates NO_X emissions.
- The shortest distance from the nearest fugitive component to the nearest house is 500 feet; the house is occupied by the owner who also has the mineral rights for the oil and gas, and this house is therefore not a receptor. (However, in a situation where it is a larger piece of property and there may be residents such as a bunkhouse on the ranch for ranch hands, the bunkhouse would be considered a receptor if the ranch hands do not share the mineral rights ownership.)
- The shortest distance from the nearest fugitive component to the next-nearest house is 1,000 feet; the house is occupied; the owner is not connected with the lease or the oil and gas site in any way.
- The shortest distance from the stack for the engine to the nearest property line for the oil and gas pad site is 100 feet.
- The shortest distance from the stack for the engine to the nearest property line for the lease is 700 feet due to surface rights allowances.

For this example, the shortest distance for addressing NO_X impacts is 700 feet, and the shortest distance for addressing benzene impacts is 1,000 feet.

Here is another example:

An oil and gas site has the following facilities and shortest distances:

- Fugitive components in VOC service.
- One natural gas-fired compressor engine which generates NO_X emissions.
- The shortest distance from the stack for the engine to the nearest boundary for the oil and gas pad site is 100 feet.
- The shortest distance from the stack for the engine to the nearest boundary for the lease is 700 feet due to surface rights allowances.
- Additionally, the company has purchased land around the lease; the shortest distance from the stack for the engine to the nearest property line for the purchased land is 1,200 feet.

For this example, the shortest distance for addressing NO_X impacts is 1,200 feet.