



Flaring of gas

Introduction

In NSW conventional and unconventional gas is made up of several gases including methane, nitrogen and carbon dioxide. It also contains trace amounts of ethane, propane, butane, pentane, hexanes, octanes and other hydrocarbons.

While the gas composition varies between sources, methane is the primary component, contributing between 95 and 99 percent of the extracted gas composition from coal seams in NSW.

Gas activities in NSW may require flaring of gas during the assessment stage of a project where gas flow rates are determined, and during production activities.

Why is gas flared?

A gas flare is required for burning gas released during the assessment or production of gas and in other industrial activities.

The primary reasons for flaring gas are:

1. to reduce the environmental impact of gases that otherwise would have been vented to the atmosphere.
2. to burn gas that cannot be used commercially
3. to burn gas that needs to be released for safety reasons.

Types of flares

There are two types of flare set-ups commonly used – enclosed and open flaring.

Enclosed flare

An enclosed flare surrounds the burner head with a refractory shell that is internally insulated. The shell helps to reduce noise, luminosity and heat radiation. Enclosed flares allow better combustion by maintaining temperature, air flow and more stable combustion conditions, maximising the conversion of methane to carbon.

Open flare

Open flaring occurs from a vertical pipe which typically has a diffuser attached to the end to promote gas combustion. Open flares have a high gas flow capacity compared with enclosed flares.



Example of an enclosed flare at a NSW coal seam gas site.



Example of an open vertical flare at a NSW coal seam gas site.

Typical flare emissions

It is environmentally better to flare methane than release it to the atmosphere due to the high greenhouse gas rating of methane. Burning of methane converts the gas to carbon dioxide and water vapour. It also produces small amounts of oxides of nitrogen. Because the burning process is not complete, it also produces trace amounts of carbon monoxide and residual unburnt hydrocarbons.

Flare regulation

Flaring of gas is regulated under the [Protection of the Environment Operations Act 1997](#) (POEO Act) in sections 124 to 128. These sections require gas facilities to operate in a proper and efficient manner and maintain equipment in an efficient condition.

The POEO Act also requires that fugitive emissions be minimised. For coal seam gas this requires:

- minimising leaks
- maintaining gas well integrity throughout the life of the project
- ongoing monitoring
- detecting leaks
- repair

This is expressed directly in conditions in the Environmental Protection Licence (EPL) for a project. The EPA requires licensees undertaking gas assessment and production activities to undertake a Leak Detection and Repair (LDAR) program.

Total fire bans

Flaring of gas is permissible during total fire bans via an exemption under Schedule 15 of the [Rural Fires Act 1997](#). Schedule 15 specifies that exhaust stacks for gas exploration, collection, drainage, refining facilities, oil refineries and steel works may continue to be operated during total fire bans. Specifically, it permits the following:

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“Fires lit, maintained or used to dispose of gaseous exhaust emissions through a chimney in connection with the exploration, collection, drainage, refining, manufacture or purification of gas, oil or metal provided that: the fire is lit and maintained in a manner which will prevent the escape or fire, sparks or incandescent or burning material from the site of the exploration, collection, draining, refining or manufacturing facility.”

Find out more about [coal seam gas and air quality requirements in NSW](#).

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