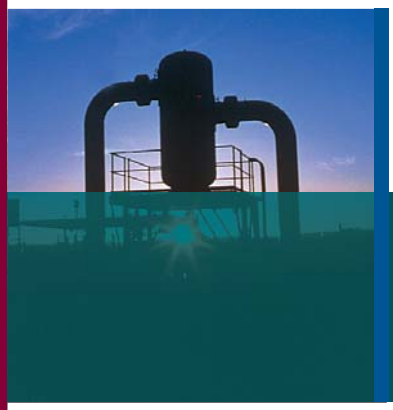

the australian PIPELINE industry association Ltd

APIA FACT SHEET 1 - 2011

Natural Gas in Australia

Natural gas predominantly comprises methane, a colourless and odourless gas. (Natural gas that is delivered to the general population is not odourless; as a safety measure, the distinctive smell comes from an additive which assists detection.)

Natural gas is found in two main forms in Australia: as conventional natural gas, found in subterranean petroleum reservoirs (both onshore and offshore); and as coal seam gas, extracted from subterranean coal beds. Natural gas can also be produced from renewable sources, where it is emitted in the decomposition of landfill and sewage (biogas) or organic waste such as wood or sugarcane residue (biomass).

Australia has abundant reserves of natural gas. As natural gas is found deep underground, produced over millions of years from the decomposition of organic matter, it is difficult to determine exactly how large Australia's gas reserves are. Government estimates indicate there are over 180 400 PJ of natural gas reserves (one PJ of natural gas has the energy equivalent of burning about 43,000 tonnes of black coal or 29 million litres of petrol) in Australia, with the majority being located off the coast of the north-west.

In 2008/09, 1,916 PJ of natural gas were produced in Australia, of which 1233 PJ, or around 60%, was consumed domestically and the remaining 40% was exported. At current rates of production, this places Australia's proven reserves at around 100 years of supply. With the continuously improving understanding of eastern Australia's coal seam gas reserves, this level of supply is constantly growing.

Natural gas that is used in Australia is transported from the often remote gas fields and processing facilities to areas of demand by long distance, high pressure, steel pipelines known as gas transmission pipelines. Once at a region of demand, which may be an industrial area or city, the gas is distributed to users through a low pressure pipeline system known as a gas distribution network.

Gas is primarily used for energy, either directly for purposes such as heating and cooking, or indirectly in electricity generation. Whilst the most known forms of gas use are those in the home, such as gas central heating and gas stoves, only 11% of gas is used for residential purposes, with the majority being used in large, industrial processes that require heat. There is also significant demand for gas as a fuel in electricity generation. Additionally, natural gas is used in fertilizer manufacture.

Natural gas is the cleanest fossil fuel energy source available. When used in electricity generation, natural gas generates around 60% less carbon dioxide emissions than a black coal power station and around 70% less than the emissions of a brown coal power station. Gas fired power stations also use around 1/6th the water required for most efficient coal fired power stations.

Switching to gas for home appliances would see households significantly reduce their carbon footprint while, at the same time, improving the efficiency and performance of heating, cooling and cooking appliances.

Natural Gas Terminology

There are several different forms and types of gas in widespread use in Australia, many of which are referred to incorrectly from time to time. For ease of understanding, here are some of the more common terms and their meanings:

Natural Gas: The gas most commonly used in households and by industry for heating and generating power. It comprises mainly methane and is sourced from naturally occurring underground reservoirs. Natural gas is also known as conventional gas or pipeline gas, to distinguish it from alternatives.

Liquefied Natural Gas: LNG is natural gas that has been converted to liquid form for ease of bulk storage or transport. Liquefied natural gas takes up about 1/600th the volume of natural gas. The liquefaction process involves removal of certain components, such as dust, helium, water, and heavy hydrocarbon. The natural gas is then condensed into a liquid at close to atmospheric pressure by cooling it to approximately –163°C. The reduction in volume makes it more cost-efficient to transport over long distances where pipelines do not exist, especially over water by cryogenic sea vessels (LNG carriers).

Compressed Natural Gas: CNG is natural gas that has been compressed to around 1/100th its normal volume. It is stored in gas bottles and can be used as an alternative to petrol for road transport vehicles. Modifications are required to enable CNG use in cars, buses and other vehicles. CNG is widely used in South America and Europe as a transportation fuel but has, to date, had limited usage in Australia, although some bus fleets have been converted.

Coal Seam Gas: Sometimes called Coal Seam Methane, CSG is similar in composition to natural gas, and fast becoming widely used on the east coast of Australia. CSG is so called because it is sourced from underground coal beds. CSG should not be confused with coal gasification (using high pressure techniques to turn coal into gas), or methane which is emitted as a waste product from coal mining.

Waste Coal Mine Methane: Waste Coal Mine Methane is methane emitted from coal during the coal mining process. It is a major source of emissions for the coal mining industry and can be captured and is typically used for on-site power generation.

Liquefied Petroleum Gas: LPG is a liquefied gas comprising petroleum gases other than methane. LPG is widely used in Australia for transportation, particularly by taxis, because many of Australia's petroleum deposits contain significant volumes of the appropriate gases.

Biogas: Biogas is produced by the natural breakdown of biological matter in the absence of oxygen, usually underground. A common source of biogas is landfill, where buried food scraps decompose over time. Biogas from landfill usually contains about 50% methane, with the remainder comprising mainly carbon dioxide and nitrogen.

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