



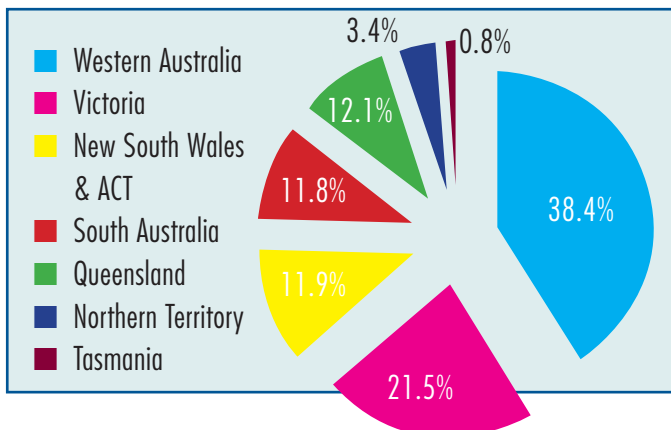
Australian Gas Consumption

About 60% of natural gas produced in Australia is consumed in Australia and 40% is exported in the form of LNG on tankers. In 2008/09, Australian domestic consumption of natural gas totalled 1233PJ, representing 22% of Australia's primary energy needs, which in 2008/09 was 5773 PJ. Natural gas consumption has grown strongly in recent years, with average annual growth over the last five years of 3.1%. Given an increasing focus on climate change issues, the Australian Bureau of Agriculture and Resource Economics (ABARE) expects growth in consumption of natural gas to expand significantly by 2030, with natural gas predicted to provide over 35% of Australia's primary energy needs.

Due to the disparate location of natural gas reserves, and the nation's range of climates, Australia's consumption and usage of natural gas varies widely.

Gross natural gas consumption by state, 2008/09

State	Natural gas consumption PJ	Share of natural gas consumption
Western Australia	473.5	38.4%
Victoria	265.1	21.5%
Queensland	149.2	12.1%
New South Wales & ACT	146.7	11.9%
South Australia	145.9	11.8%
Northern Territory	41.9	3.4%
Tasmania	9.8	0.8%



Australian Gas Usage

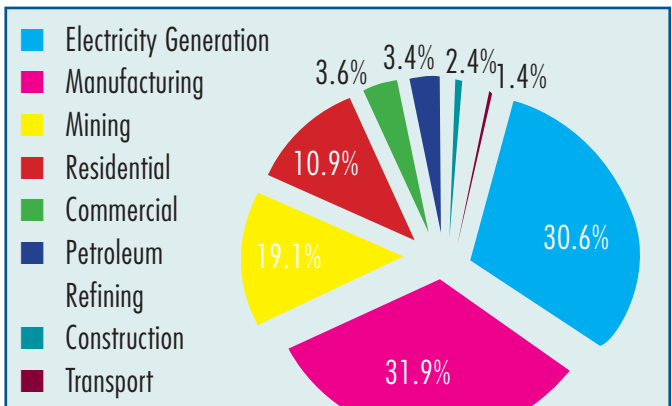
At a national level, natural gas consumption is dominated by the electricity generation and manufacturing sectors.

The main use of natural gas is for energy through combustion. The gas is burnt and the heat released is used directly or indirectly to power other processes. In the simplest case, natural gas can be burned on a stove to boil water, or to generate electricity through a steam or gas turbine.

Another significant process for which natural gas is used is as a feedstock for chemical and fertiliser manufacture. The methane in the natural gas is subject to chemical processes leading to the creation of other useful chemicals.

Primary natural gas consumption by sector, 2007/08

Sector	Share of natural gas consumption
Manufacturing	31.9%
Electricity Generation	30.6%
Mining	19.1%
Residential	10.9%
Commercial	3.6%
Petroleum Refining	3.4%
Construction	2.4%
Transport	1.4%



The proportions used in each sector differ widely between the States, depending upon the availability of gas and other fuels.

Residential and Commercial Uses

The uses of natural gas familiar to most people are those that occur in the home: water heating, space heating and cooling and cooking. Natural gas is particularly useful for these applications for two reasons; it is comparatively inexpensive and it is responsive. Unlike electric heaters or cook tops, which typically require time to heat a metal element, gas can be switched on or off instantly, providing fast temperature control. Also, modern gas appliances are typically more efficient than their electric counterparts, having better thermal efficiency (in the conversion of energy of input to energy of output) and thus being cheaper to run. It is estimated that, by switching from electricity to natural gas appliances, an average household could reduce its carbon emissions by up to 75%

Gas Fired Electricity Generation

Natural gas is a major source of electricity generation through the use of gas turbines and steam turbines. Natural gas is critical in providing peaking power. Peak load power stations run only in times of high demand for electricity and natural gas is a preferred fuel to coal in these facilities as they need to be started up quickly and usually run for a relatively short period of time.

Manufacturing

Natural gas is used by manufacturing industries for many applications, including ore smelting, minerals processing, drying and dehumidification, glass smelting, food processing, waste treatment and incineration, and fueling industrial boilers. Because it is easily controlled, natural gas is particularly useful to those manufacturing industries that utilise high temperature kilns, such as the alumina, glass, brick and cement industries. Natural gas may also be used as a feedstock for the manufacturing of a number of chemicals and products. Gases such as butane, ethane, and propane can be extracted from natural gas to be used as a feedstock for products such as fertilisers, plastics and pharmaceutical products. Natural gas as a feedstock is commonly found as a building block for methanol, which in turn has many industrial applications.

Mining

In the mining sector natural gas is mainly used to provide onsite electricity generation through smaller scale gas and steam turbines.

Natural Gas Composition

The overall composition of natural gas depends upon its source, with coal seam gas being almost pure methane and the composition of conventional gas, while mostly methane, varies widely, depending upon the characteristics of the geology and geography of its source. A typical processed stream of gas comprises:

Component	Presence Conventional Gas (%)	Presence Coal Seam Gas (%)
Methane	90.0	97.0
Ethane	4.0	0
Propane	1.7	0
Butane	0.4	0
Pentane	0.11	0
Hexane	0.08	0
Heptane	0.01	0
Carbon dioxide	2.7	2.0
Nitrogen	1.0	1.0

AUSTRALIAN PIPELINE INDUSTRY ASSOCIATION LTD

Level 1, 7 National Circuit, Barton ACT 2600

PO Box 5416, Kingston ACT 2604

T: 02 6273 0577 F: 02 6273 0588 E: apia@apia.asn.au W: www.apia.net.au