Find out more about...
Coal Seam Gas (CSG)

Did you know?

- CSG is natural gas, generally 95-97% pure methane.¹
- CSG has been with us since Australia’s coal mining industry began over 100 years ago.
- CSG has been commercially produced in Queensland for nearly 20 years.

- CSG makes up over 87% of eastern Australia’s gas reserves.²
- Queensland relies on CSG for over 90% of its gas supply.
- CSG is used by over 1,000,000 homes and businesses in New South Wales.

+ Gas-fired power plants emit only half the greenhouse gases of coal-fired plants and use a fraction of the water.
What is coal seam gas?

Coal seam gas (CSG) is natural gas mainly composed of methane, the odourless and colourless gas used in homes and businesses.

CSG collects in underground coal seams formed over tens of millions of years from compressed organic material. The naturally occurring coal seam gas bonds to the surface of coal particles.

A combination of water and ground pressure traps the gas in fractures of underground coal seams, typically 200 – 1,000 metres below the surface.

Where is CSG found?

Australia’s major coal resources are in a number of basins – the Bowen and Surat in Queensland, the Gunnedah, Gloucester and Sydney in New South Wales and the Clarence-Moreton Basin on the border between those two States.

To build a picture of the coal resource in a particular location, we use special trucks that bounce seismic waves underground to determine the depth and thickness of coal seams.

If we think there is likely to be a commercial quantity of CSG, we drill test wells.

Benefits of CSG

Natural Gas from coal seams is used in exactly the same way as other natural gas, for cooking, heating, electricity production and to make products such as fertilisers.

With over 30 per cent of eastern Australia’s gas currently coming from coal seams, it’s likely you are already using CSG.

CSG’s benefits go beyond its use as a fuel. The CSG industry has created jobs and local business opportunities in regional Australia, helping revitalise communities and reversing the migration of youth to urban areas. For instance, in Roma Queensland, where the CSG industry has been active for nearly 20 years, the local economy grew 120% from 2006 to 2011.3

Over 87% of eastern Australia’s reserves are held in coal seams

Less than 10 years of conventional gas supply remains

Source: EnergyQuest February 2014 Quarterly, as at December 2013

Geology of natural gas

1. Wind Turbine: 65m
2. Onshore Oil and Gas Drilling Rig: 43m
3. Gas Wellhead: 1.5m
4. Typical Coal Seam Gas Well: 200m-1000m
5. Typical Oil or Sandstone Gas Well: 1200m-3000m
6. Typical Shale Gas: 2500m-4000m
How do you produce CSG?

CSG was first produced in Australia during the early days of coal mining. It was extracted at the Sydney Harbour Colliery in Balmain from the early 1900s and sold as an industrial and motor fuel, with production peaking in 1944.

Modern CSG production has been occurring safely and sustainably in central Queensland since 1996 and in south-western Sydney for over 10 years.

To produce CSG, we drill wells deep underground into the coal seams. These wells are surrounded by steel and concrete to ensure they are separate from other underground layers, such as water aquifers.

Then we remove the salty water that is trapping the gas in the coal seam. This water is sent for treatment and reuse. The gas is then pumped through a network of pipes to stations where it is compressed, purified and sent on to customers.

Sometimes we need to use a process called hydraulic fracturing to release more gas from a well. This involves pumping a mixture of water, sand and small quantities of chemicals into the coal seam at pressure to fracture it. The water and chemicals are then pumped out and the sand remains in the coal seam, holding open the fractures to allow more gas to be released.

CSG and the environment

Natural gas is the cleanest burning fossil fuel. When used for electricity, it produces half the emissions of burning brown coal and uses less water.

Using gas is one way that Australia and the world can reduce carbon emissions. Emissions in the United States have fallen dramatically in recent years, which many credit to their increased use of gas.

All CSG exploration and production in Australia occurs under strict regulatory conditions enforced by State and Federal governments to ensure it is done safely and sustainably.
Interested in learning more about natural gas?

Visit santos.com for more fact sheets on a wide range of gas-related topics.

Santos – an Australian Pioneer

An Australian energy pioneer since 1954, Santos is a leading oil and gas producer, supplying Australian and Asian customers. With over 3,000 employees across Australia and Asia, Santos’ foundations are based on safe, sustainable operations and working in partnership with host communities, governments, business partners and shareholders.

INSIGHT

Santos’ open conversation with communities

Insight is our commitment to share knowledge and understanding about energy and extraction – because better decisions are made when we’re all better informed.

Industry references

2. EnergyQuest February 2014 Quarterly, as at December 2013
3. Maranoa Regional Council, Dept. of Employment, ABS