

# Introduction to Queensland's Gas Industry

## Chapter 02

In this chapter we cover:

- **Queensland petroleum & gas overview**
- **Key Queensland gas facts**
- **The difference between conventional & unconventional gas wells**
- **State Government Legislation & Policy Framework**

*Current as of December 2020*

# Queensland petroleum & gas overview

**LANDHOLDER TIP:** Unless stated otherwise, the term 'gas' refers to natural gas, a naturally occurring hydrocarbon gas mixture consisting primarily of methane (CH<sub>4</sub>).

The Surat and Bowen basins in southern and central Queensland respectively are a current focus for petroleum and gas exploration and production. Both regions are supported by pipeline and transport infrastructure.

CSG from the Bowen and Surat basins represents 95% of the State's total gas production. Many of Queensland's known petroleum and gas basins also host conventional oil and gas reserves, as well as potential unconventional shale gas (natural gas trapped within shale formations) and tight gas (natural gas reservoirs locked in extraordinarily impermeable rock reserves). These include the Eromanga, Cooper, Galilee, Adavale, Georgina, Millungera, South Nicholson and the Isa Super basins.

Outside producing and known petroleum and gas basins on this map, many areas remain largely under-explored.



Map source: Queensland's petroleum and coal seam gas – Department of Resources, 2017

**DID YOU KNOW?** In 'conventional' geology, gas is found with other petroleum products such as oil. CSG is released from cleats and fractures in coal. While location and production methods vary, the same gas product is produced by conventional and CSG fields.

# Key Queensland gas facts

01

Australia's \$46 billion per year petroleum and gas industry contributes 64% of Australia's primary energy, 2.4% of Australia's gross domestic product, and has created approximately 80,000 jobs.

02

Australia was officially the world's second largest liquefied natural gas (LNG) exporter in 2019, exporting 77.0 million tonnes of LNG – with Queensland contributing 22.1 million tonnes (or 28.7%) of the total.

03

Australia's gas supply is growing in response to new technology that allows production from resources that were too difficult to access in the past.

04

Aside from shale gas, Australia has an estimated 819 trillion cubic feet (Tcf) of known gas resources, which is sufficient to power a city of one million people for 16,000 years.

05

Queensland was the first in the world to develop a CSG to LNG export industry. Production of LNG initially began in 2014 on Curtis Island near Gladstone, Queensland.

06

Petroleum and gas industry terms 'conventional' and 'unconventional' define the reservoir structure, not the physical properties of the gas itself.

07

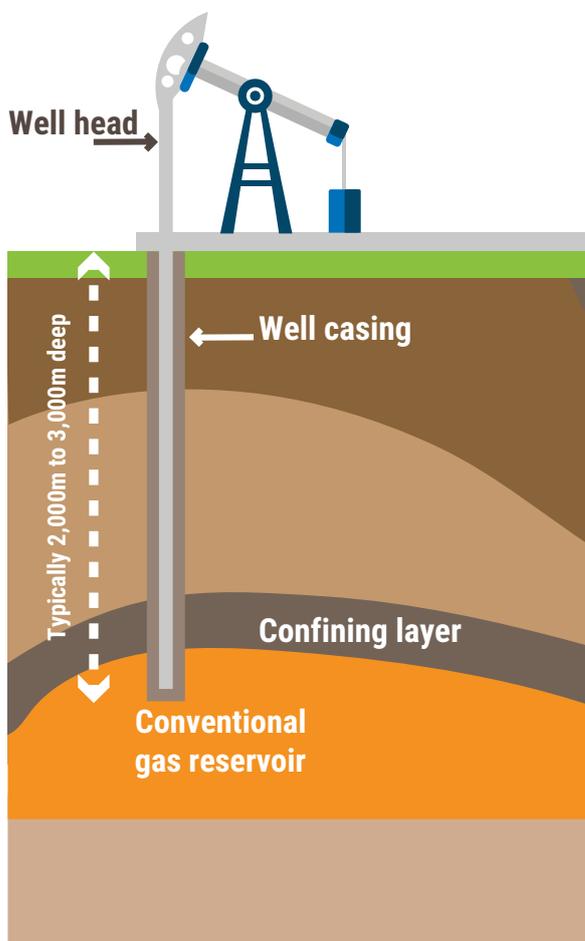
Australia's natural gas production (domestic use and LNG) increased by 11% in 2019 compared with 2018. Production has more than doubled over the last 5 years with double digit growth year-on-year since 2014.

Sources: [APPEA, 2020](#)  
[BP Statistical Review of World Energy 2020](#)  
[Gladstone Ports Corporation](#)

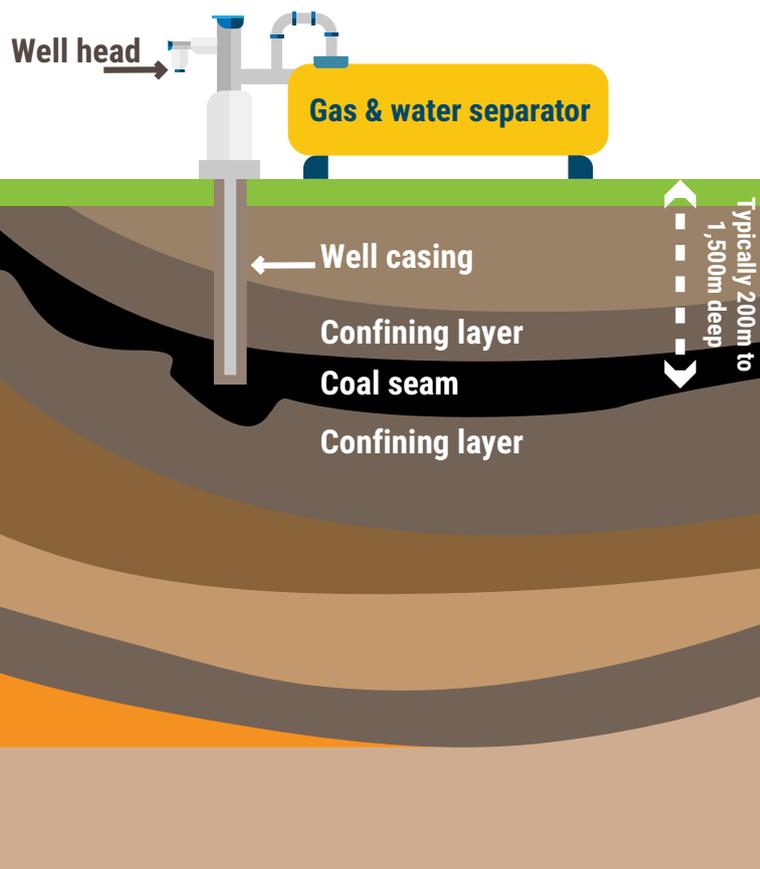
**DID YOU KNOW?** Natural gas for long-distance export is chilled to  $-161^{\circ}\text{C}$ , where it becomes a liquid. LNG occupies 1/600 of the space it does as a gas. Large volumes of LNG can be exported in purpose-built tanker ships and then regasified on delivery.

# The difference between...

## Conventional gas well



## Unconventional (CSG) gas well



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**DID YOU KNOW?** Liquefied petroleum gas (LPG) is a mix of ethane, propane and butane stored and transported in metal canisters as a liquid. LPG is a component of conventional oil and natural gas production. Its most common use is as a fuel for cooking in barbecues and stoves.

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# State Government Legislation & Policy Framework

Petroleum and gas are important economic contributors to Queensland and are key drivers of economic growth and job creation in regional Queensland. As per Chapter 1, Part 4 of the *Petroleum and Gas (Production and Safety) Act 2004*, all petroleum and gas found in natural underground reservoirs are the property of the State Government and is managed for the benefit of all Queenslanders. A comprehensive regulatory framework guides the development of Queensland's onshore petroleum and gas resources, notably in relation to large-scale CSG extraction and an associated LNG export industry. The laws are designed to protect rural landholders, communities and the environment through:

- Detailed assessments of proposed projects
- Environmental impact assessments including cumulative groundwater impact assessment and management framework
- Protection of the Great Artesian Basin, local water supplies and areas of regional interest
- Provision of fair conditions and compensation for affected landholders
- Ensuring petroleum and gas development is safe
- Establishing a strict compliance and enforcement regime.

DOR is committed to ensuring Queensland's resources are managed fairly and responsibly, to deliver sustainable benefits for all Queenslanders. They offer a range of engagement, compliance, tenure management, technical and geoscientific services provided by staff located throughout Queensland. Other agencies and organisations contributing to the sustainability and safety of the petroleum and gas industry in Queensland include:

- [Resources Safety & Health Queensland \(RSHQ\)](#)
- [Land Access Ombudsman \(LAO\)](#)
- [Department of Environment and Science \(DES\)](#)
- [Department of Regional Development, Manufacturing and Water \(DRDMW\)](#)
- [Department of Agriculture and Fisheries \(DAF\)](#)
- [Office of Groundwater Impact Assessment \(OGIA\)](#)
- [CSIRO's Gas Industry Social & Environmental Research Alliance \(GISERA\)](#)
- [The University of Queensland's Centre for Natural Gas.](#)

**LANDHOLDER TIP:** A resource company must obtain the appropriate resource authority before any exploration or production activity is conducted. Authorities are issued under the *Petroleum and Gas (Production and Safety) Act 2004* for:

**Exploration** – an authority to prospect (ATP) is granted to allow a resource company to explore for petroleum and gas. A potential commercial area (PCA) may be declared over all, or part of an ATP to allow for further appraisal to prove up the commerciality of a discovery. The maximum term of a PCA is 15 years.

**Production** – a petroleum lease (PL) is granted once exploration activities have been completed and a commercial petroleum and gas resource is known to exist.

**Infrastructure development** – a petroleum facility licence (PFL) is required for any processing, refining, storage or transport facility if the facility is not already covered by your petroleum lease or petroleum pipeline licence (PPL).

**Transmission** – a Petroleum Pipeline License (PPL) is an authority to build and operate a transmission pipeline to transport gas or associated water.

**Information gathering without an ATP or PL** – information gathering authorities are required when accessing private land if a resource company has not yet been granted an ATP or PL, these authorities include a petroleum survey license (PSL), water monitoring authority (WMA) and data acquisition authority (DAA).

# State Government Legislation & Policy Framework

**A REGULATORY FRAMEWORK COVERS THE FULL LIFE CYCLE OF THE ONSHORE PETROLEUM AND GAS INDUSTRY IN QUEENSLAND FROM EXPLORATION TO PRODUCTION AND REHABILITATION.**

Below is an interactive list of key legislation included in the framework. More details on how these contribute to the regulation of the petroleum and gas industry can be found on the respective department websites, or by visiting the Commission's website: [www.gfcq.org.au](http://www.gfcq.org.au)

## KEY PETROLEUM AND GAS INDUSTRY REGULATION & LEGISLATION

[Petroleum and Gas \(Production and Safety\) Act 2004](#)

[Mineral and Energy Resources \(Common Provisions\) Act 2014](#)

[Land Access Code 2016](#)

[Environmental Protection Act 1994](#)

[Water Act 2000](#)

[Petroleum Act 1923](#)

[Mineral and Energy Resources \(Financial Provisioning\) Act 2018](#)

Department of Resources

Department of Resources

Department of Resources

Department of Environment & Science

Department of Regional Development, Manufacturing and Water

Department of Environment & Science

Department of Resources

Queensland Treasury

## OTHER RELEVANT REGULATION & LEGISLATION

[Biosecurity Act 2014](#)

[Environmental Offsets Act 2014](#)

[Forestry Act 1959](#)

[Nature Conservation Act 1992](#)

[Regional Planning Interests Act 2014](#)

[State Development and Public Works Organisation Act 1971](#)

[Waste Reduction and Recycling Act 2011](#)

Department of Agriculture & Fisheries

Department of Environment & Science

Department of Environment & Science

Department of Environment & Science

Department of State Development, Infrastructure, Local Government and Planning

Department of State Development, Infrastructure, Local Government and Planning

Department of Environment & Science

## ADDITIONAL RELEVANT QUEENSLAND LEGISLATION

- [Land Act 1994](#)
- [Aboriginal Cultural Heritage Act 2003](#)
- [Queensland Heritage Act 1992](#)
- [Public Health Act 2005](#)
- [Transport Operations \(Road Use Management\) Act 1995](#)
- [Planning Act 2016](#)
- [Human Rights Act 2019](#)

## FEDERAL LEGISLATION

- [Environment Protection and Biodiversity Conservation Act 1999](#)
- [Water Act 2007](#)
- [Native Title Act 1993](#)
- [Industrial Chemicals \(Notification and Assessment\) Act 1989](#)
- [Corporations Act 2001](#)
- [Australian Securities and Investments Commission Act 2001](#)
- [Fair Work Act 2009](#)