

chapter 10

Glossary

A non-exhaustive list of terms used in the Roadmap follows. The references for this glossary are provided on the last page of this chapter.

Accumulation	A body of naturally occurring petroleum in a host rock, or coal in a sedimentary succession.
Basin-centred Gas*	An unconventional natural gas accumulation that is regionally pervasive and characterised by low permeability, abnormal pressure, gas saturated reservoirs and lack of a down-dip water leg.
Coal Seam Gas (CSG)[^]	Natural gas contained in coal deposits. Usually mostly methane, may be produced with variable amounts of inert or non-inert gases (also termed Coalbed Methane, CBM or Natural Gas from Coal, NGC)
Coal to Liquids (CTL) ^{##}	The Coal to Liquids (CTL) process is a direct conversion process in which coal is reacted with hydrogen and a solvent under high temperature and pressure to produce a liquid. This product is then further refined to achieve high grade fuel characteristics.
Condensate[^]	Condensates are a mixture of hydrocarbons (mainly pentanes and heavier) that exist in the gaseous phase at reservoir temperature and pressure, but when produced, are in the liquid phase at surface pressure and temperature conditions. Condensate differs from natural gas liquids (NGL) in two principal respects: 1) NGL is extracted and recovered in gas plants rather than lease separators or other lease facilities; and 2) NGL includes very light hydrocarbons (ethane, propane, butanes) as well as the pentanes-plus that are the main constituents of condensate.
Continuous Gas Accumulation[^]	A gas accumulation that is pervasive throughout a large area and which is not significantly affected by hydrodynamic influences. Such accumulations are included in Unconventional Resources. Examples of such deposits include “basin-centred” gas, coal seam gas, shale gas and gas hydrates.
Conventional Resources[^]	Conventional oil and gas resources exist in discrete petroleum accumulations related to localised geological structural features and/or stratigraphic conditions, typically with each accumulation bounded by a downdip contact with an aquifer, and which is significantly affected by hydrodynamic influences such as buoyancy of petroleum in water.

Gas Hydrates*	Gas hydrates are naturally occurring crystalline substances composed of water and gas, in which a solid water lattice accommodates gas molecules in a cage-like structure, or clathrate. At conditions of standard temperature and pressure (STP), one volume of saturated methane hydrate will contain as much as 164 volumes of methane gas. Because of this large gas-storage capacity, gas hydrates are thought to represent an important future source of natural gas. Gas hydrates are included in unconventional resources, but the technology to support commercial production has yet to be developed.
Gas-to-Liquids (GTL) Projects^Λ	Gas-to-Liquids projects use specialised processing (e.g. Fischer-Tropsch synthesis) to convert natural gas or syngas into liquid petroleum products. These projects are applied to large natural gas accumulations where a lack of adequate infrastructure or local markets would make conventional natural gas development uneconomic. These projects can also use syngas as a feedstock, produced by gasification of coal deposits (mined or in-situ).
Hydrocarbons*	Hydrocarbons are chemical compounds consisting wholly of hydrogen and carbon.
Liquefied Natural Gas (LNG) Project*	Liquefied Natural Gas projects use specialised cryogenic processing to convert natural gas into liquid form for tanker transport. LNG is about 1/614 the volume of natural gas at standard temperature and pressure.
Natural Gas*	Natural Gas is the portion of petroleum that exists either in the gaseous phase or is in solution in crude oil in natural underground reservoirs, and which is gaseous at atmospheric conditions of pressure and temperature. Natural Gas may include some amount of non-hydrocarbons.
Natural Gas Liquids*	Natural Gas Liquids (NGL) are a mixture of light hydrocarbons that exist in the gaseous phase and are recovered as liquids in gas processing plants. NGL differs from condensate in two principal respects: 1) NGL is extracted and recovered in gas plants rather than lease separators or other lease facilities; and 2) NGL includes very light hydrocarbons (ethane, propane, butanes) as well as the pentanes-plus that are the main constituents of condensate.
Non-Hydrocarbon Gas^Λ	Naturally occurring associated gases such as nitrogen, carbon dioxide, hydrogen sulphide and helium.
Oil Shales*	Shale, siltstone and marl deposits highly saturated with kerogen. Whether extracted by mining or in situ processes, the material must be extensively processed to yield a marketable product (synthetic crude oil)
Petroleum*	Petroleum is defined as a naturally occurring mixture consisting of hydrocarbons in the gaseous, liquid, or solid phase. Petroleum may also contain non-hydrocarbon compounds, common examples of which are carbon dioxide, nitrogen, hydrogen sulphide and sulphur. In rare cases, non-hydrocarbon content could be greater than 50%.

Shale Gas⁺	Shale gas is gas produced from organic-rich mudrocks, which serve as the source and reservoir for the gas. Shales have very low matrix permeabilities (hundreds of nanodarcies), and therefore large natural or hydraulically induced fracture networks are required to produce the gas at economic rates.
Syngas[#]	Syngas is a combustible mixture of carbon monoxide and hydrogen produced by coal gasification. The coal gasification process uses the reaction of coal with oxygen and steam to create syngas. Integrated Gasification Combined Cycle (IGCC) plants combust syngas in a combined-cycle turbine system to produce electricity. Syngas is also widely used as a feedstock for the production of chemicals and liquid fuels. Syngas is also called synthesis gas.
Synthetic Crude Oil (SCO)*	A mixture of hydrocarbons derived by upgrading (i.e., chemically altering) natural bitumen from oil sands, kerogen from oil shales, or processing of other substances such as natural gas or coal. SCO may contain sulphur or other non-hydrocarbon compounds and has many similarities to crude oil.
Tight Gas Formation (TGF)⁺	A reservoir that cannot be produced at economic flow rates nor recover economic volumes of natural gas unless the well is stimulated by a large hydraulic fracture treatment or produced by use of a horizontal wellbore or multilateral wellbores (Holditch, 2006). TGFs are generally divided into (1) basin-centred gas accumulations (BCGA) and (2) gas reservoirs that occur in low-permeability, poor quality reservoir rocks in conventional structural and stratigraphic traps.
Unconventional Resources*	Unconventional resources exist in petroleum accumulations that are pervasive throughout a large area and that are not significantly affected by hydrodynamic influences (also called "continuous-type deposits"). Examples include coalbed methane (CBM), basin-centred gas, shale gas, gas hydrate, natural bitumen (tar sands), and oil shale deposits. Typically, such accumulations require specialized extraction technology (e.g., dewatering of CBM, massive fracturing programmes for shale gas, steam and/or solvents to mobilize bitumen for in-situ recovery, and, in some cases, mining activities). Moreover, the extracted petroleum may require significant processing prior to sale (e.g., bitumen upgraders). (Also termed "Non-Conventional" Resources and "Continuous Deposits").
Underground Coal Gasification (UCG)~	Underground Coal Gasification (UCG) is the process of gasifying coal in-situ, that is, where it lies under the ground. The process eliminates the need for mining the coal and processing it through a surface gasification plant. The coal is converted to syngas through a series of controlled reaction involving heat, pressure, oxygen, coal and water. The syngas product is rich in hydrogen (H ₂), carbon monoxide (CO) and methane (CH ₄).

*From the Glossary of Terms appended to the Petroleum Resources Management System, SPE, AAPG, WPC and SPEE, 2007
 ^Modified from the Glossary of Terms appended to the Petroleum Resources Management System, SPE, AAPG, WPC and SPEE, 2007.
 +From the Guidelines for the Application of the Petroleum Resources Management System SPE, AAPG, WPC and SPEE, 2011.
 #<http://www.csiro.au/science/Coal-Gasification-Overview.html>
 ##<http://www.csiro.au/science/Coal-To-Liquids.html>
 ~http://www.lincenergy.com/information_sheets.php
 Holditch, S.A. 2006. Tight Gas Sands. J Pet Technology 58 (6): 86-93. SPE-103356-MS.