

Blue hydrogen development

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Increasingly, hydrogen is being considered as a means of converting carbon-free energy into a chemical fuel, which may be able to leverage existing natural gas infrastructure and expertise. While Canada is already one of the top 10 hydrogen producers in the world, growing our supply chains provides an opportunity to leverage existing infrastructure to meet international demand as many countries look to build out national hydrogen strategies to combat the effects of climate change. Canada recently acknowledged this tremendous socio-economic potential by rolling out its own [national hydrogen strategy](#), and early studies have indicated that by 2050 Canadian hydrogen production could grow by up to seven times relative to today's production figures to meet global demand.

In this resource, we discuss the process of “blue” hydrogen development, which is the primary focus of governments and developers in Western Canada. While there are many options for hydrogen production, significant effort in Canada is being directed to developing low-to-neutral carbon intensity blue hydrogen using steam methane reforming (SMR) paired with carbon capture, utilization and storage (CCUS) to prevent the carbon dioxide by-product from being emitted to the atmosphere. This can be achieved with the addition of a carbon capture loop to existing Canadian SMR operations and by leveraging oil and gas expertise and the geological conditions of the prairie provinces. Blue hydrogen offers cost and scalability advantages as compared to “green” hydrogen (produced using electricity from renewables with water) and has the added benefit of redeploying existing and underemployed oil and gas expertise and leveraging existing pipeline and natural gas infrastructure.

We also outline environmental considerations related to blue hydrogen development, including concerns regarding storage, handling and distribution of produced hydrogen, and the regulatory schemes presently applied or likely to be applied to blue hydrogen development in Alberta, British Columbia and Saskatchewan, including the licensing requirements related to facilities, water diversion and CCUS. As governments are currently under pressure to incentivize the development of hydrogen production, hydrogen producers in Western Canada are expected to be supported by regulations that facilitate the development of hydrogen production facilities and associated technologies, as well as the use of hydrogen energy for various purposes.

Download *Emerging technologies in energy: Blue hydrogen* [PDF]

Download the full guide relating to geothermal, lithium and blue hydrogen development: *Emerging technologies in energy: Environmental and regulatory considerations for Western Canada*.