AUSTRALIA'S LNG IMPORTS LEAD TO STORAGE QUESTIONS

As Australia contends with a growing mismatch between demand and supply of LNG despite being the world's largest LNG exporter, ION Commodities' Mark Davis examines the opportunities and issues this brings for storage operators

To aid its gas shortage, Australia will soon import its own liquefied natural gas (LNG). Australia is a country rich in natural gas, so to many, this may seem like a paradox. The truth of the matter is Australia's export boom came with a cost.

In November 2018, Australia celebrated when it claimed the title of 'the world's largest exporter of LNG' with some 6.5 million tonnes (about 312 Bcf) of LNG delivered to the fast-growing Asian markets – surpassing perennial export leader Qatar, which shipped 6.2 million tonnes (or 298 Bcf) to its global customers during November. By March 2019, the Department of Industry reported that Australia's biggest customer is Japan, which accounts for 45% of Australia's LNG export earnings. China follows at 33%, then South Korea at 13%, and the rest of the world at 9%.

However, the tables turned when the rapid growth of its LNG export market mismatched with domestic supply and demand. As the country works to reverse the damage and starts to import to counterbalance its exports, it'll face key issues like storage optimisation.

WHY IMPORT?

The world's largest LNG exporter is becoming an importer. There are plans for five LNG import terminal projects to begin in 2021 and 2022, possibly forcing gas users in New South Wales, South Australia, Tasmania, and Victoria into more direct competition with Asian buyers for gas from Northern Australia.

According to the Australian government, proved natural gas reserves currently stand at 240 trillion cubic feet (Tcf) with estimates of potential reserves as high as several thousand Tcf. With so many reserves, why are they not being utilised? The reason is because most of those potential reserves exist in shale or tight sand deposits, which would require massive hydraulic fracturing to economically produce. This is a controversial, divisive, and increasingly politically charged topic around the country.

Finally, piping gas to southern markets is expensive, making LNG imports more viable. James Baulderstone, chief executive officer at Australian Industrial Energy, is pioneering the development of New South Wales' first LNG import terminal at Port Kembla. He explains that he can feed 100 petajoules of gas – enough to supply about 75% of New South Wales state's annual demand – into the market years earlier and at a fraction of the cost through LNG imports.

ROADBLOCKS FOR LNG STORAGE

Most of the country's storage facilities are located on the Eastern seaboard, where the majority of the population lives. Otherwise, storage options throughout the rest of Australia are sparse. When imports of LNG do arrive to the Australian regions that need it most, will there be adequate storage infrastructure?

Choosing which LNG storage class is best for these new geographies is one of the many big decisions Australia's government must explore. There are two classes of LNG storage. The first class is one that occurs when floating LNG ships are delayed offshore, similar to how oil tankers are used as storage when the asset price is expected to rise over time. The second is called a Floating Storage and Regas Unit (FSRU). A FSRU, which can either be constructed or converted from an LNG tanker, is used to re-gasify LNG.

Seoul-based EPIK announced in early December 2018 that it had entered into an agreement with the Port of Newcastle to build a floating FSRU LNG unit called 'Newcastle LNG'. If all goes well, the 170,000 m3 FSRU and associated infrastructure will be located inside the port of Newcastle and will serve the gas market in New South Wales. The Newcastle LNG facility is forecast to cost between $400 million and $430 million.

As large-scale gas import facilities like EPIK's begin to establish a presence, a slew of complex issues will likely arise. Especially for LNG storage, the process of liquefaction is complex and requires extremely dedicated maintenance. Limitations to the size of the storage tanks will also need to be closely assessed.

Next, Australia will need to consider the

demand pattern for peak usage. Seasonal volatility and peak shaving, among all other risk mitigation measurements, will need to be determined in demand forecasts.

A portfolio view on how to optimise storage mechanisms, from commercial contracts to reservoir injection, will require support from complex forecasting models. Lastly, the reservoir's physical location to support LNG storage must be thoroughly researched. Choosing a strategic location of the facility will minimise transportation costs, the number of regulations, and the ability to respond quickly to changing demand. Questions like these are just the tip of the LNG storage iceberg.

> "The world's largest LNG exporter is becoming an importer"

OPTIMISING STORAGE WITH ADVANCED ANALYTICS

Commodity storage plays a crucial role in the commodities' supply, transportation, and consumption chains – ultimately impacting the balance of supply and demand. When supply is disrupted by unexpected events, a sufficient storage level will reduce the financial and physical impacts felt by downstream operators.

Managing storage strategically allows businesses to physically store commodities in a low-price environment and wait for the price to rebound to generate greater profits. With that in mind, as the LNG market and client needs continue to change, companies will require the right toolset to react at the speed and scale of the market.

Australia's storage developers, storage operators, and energy marketers will have more than enough to tackle in their planning, production, and management of future storage facilities. Those who integrate advanced analytics into their storage processes will optimise decision support and valuation for their storage facilities and value storage assets dynamically. They will also be able to optimise mark-to-market and quantify expected future profitability in multiple markets, assess the probability and nature of extreme storage scenarios, maximise storage value by deriving the optimal forward hedge positions, and support decisions for daily injection and withdrawal and adjusting forward hedges.

Accurately managing storage with the data infrastructure that quickly extracts insights allows for clear decisions on storage optimisation and management. For example, ION FEA's advanced analytics enables optimised resource monitoring, giving organisations the ability to predictively or prescriptively flag when an aspect of a storage facility will be under or over utilised. ION FEA's @Energy Suite includes products like @Energy/Storage and @Energy/StoragePlus, which provide comprehensive contract definition, multiple trading strategies, multiple price process models, detailed valuation results, and more.

Massive amounts of data and multiple data sources found in commodity storage must be streamlined and optimised. Advanced analytics provides today's LNG businesses, such as those in Australia, with the opportunity to glean new insights, leading to creative business decisions and ultimately, a competitive advantage.

FOR MORE INFORMATION

This article was written by Mark Davis, natural gas product manager at ION Commodities, ION Allegro. www.iongroup.com/ion-commodities