

CHINA'S LNG IMPORT TERMINALS

Terminal	Location	Start-up	Status	Capacity, million tonnes/year		Major shareholders
				Phase I	Phase II	
Guangdong LNG	Shenzhen, Guangdong	2006	Operating	3.7	3.0	CNOOC (33%), BP (30%)
Fujian LNG	Putian, Fujian	2009	Operating	2.6	2.6	CNOOC (60%), Fujian Zhongmin (40%)
Shanghai LNG	Yangshan, Shanghai	2009	Operating	3.0	na	CNOOC Gas & Power (45%), Shenergy Group (55%)
Dalian LNG	Dalian, Liaoning	2011	Under construction	3.0	3.0	Kunlun Energy (75%), the Dalian Port Authority (20%)
Jiangsu LNG	Rudong, Jiangsu	2011	Under construction	3.5	3.0	Kunlun Energy (55%), Pacific Oil & Gas (35%)
Zhejiang LNG	Ningbo, Zhejiang	2012	Under construction	3.0	3.0	CNOOC (51%), Zhejiang Energy (29%), Ningbo city utility (20%)
Zhuhai LNG	Zhuhai, Guangdong	2013	Under construction	3.5	3.0	CNOOC (35%), Guangdong Yuedian (25%), Guangzhou city (25%)
Shandong LNG	Qingdao, Shandong	2013	Under construction	3.0	na	Sinopec
Tangshan LNG	Tangshan, Hebei	2013	Initial approval	3.5	3.0	PetroChina (51%), Beijing Enterprises (29%), Hebei Investment (20%)
Hainan LNG	Yangpu, Hainan	2014	Initial approval	2.0	1.0	CNOOC (65%), Hainan Development Holdings (35%)
Guanxi LNG	Beishan, Guangxi	2014	Initial approval	3.0	5.0	Sinopec
Tianjin LNG	Tianjin	na	Initial approval	na	na	Sinopec
Zhuhai LNG	Zhuhai, Guangdong	na	Initial approval	2.0	3.0	Sinopec
Wenzhou LNG	Wenzhou, Zhejiang	na	Initial approval	3.0	na	ENN

Source: Poten & Partners

Report: Imports, unconventional gas to meet surging Chinese gas demand

In a prewinter analysis of Chinese natural gas demand for the 2010-11 heating season, Poten & Partners, New York, reports that the country's National Development and Reform Commission had demanded a 20% increase in gas supplies to avoid a recurrence of last winter's shortages.

Poten cites China's official Xinhua news agency, which reported that NDRC's vice-director has urged local companies to boost LNG spot purchases and move ahead on new gas projects.

PetroChina, the country's largest gas player with a 70% market share, is bearing much of the burden. Before the season began, the company had announced plans to import as many as eight LNG cargoes, which, because PetroChina's own terminals in the north are not yet ready, will have to be imported via CNOOC's Shanghai terminal, said the Poten analysis.

PetroChina imported its first and only cargo through Shanghai last winter to deal with subzero temperatures in its main, northeast China markets. Access issues with CNOOC and partner Shenergy last winter prevented the import of up to 560,000 tonnes.

Poten also reported that CNOOC has strengthened its medium-term position by contracting with GDF Suez for 2.6 million tonnes over 4 years, beginning in 2013. This additional volume narrows the country's LNG supply gap up to 2015 before major contracts with suppliers in Australia and Papua New Guinea commence. Longer term, growing demand will require more imports (see figure).

The Poten analysis cites Hudong-Zhonghua Shipbuilding, which is doubling its annual LNG construction capacity to six vessels from three, as seeing imports reaching 25 million tonnes/year by 2015. In addition, the Sinopec Economics and Development Research Institute predicted that China will expand LNG deliveries to 80 billion cu m/year (about 56 million tpy) in the next 10 years.

Poten's own LNG data, however, suggest a slightly different future with LNG demand at 25 million tonnes in 2015 and slightly more than 40 million tpy by 2020. Even in the more conservative forecast, said Poten, gas demand will absorb all of the new supplies by 2017 and Chinese buyers will require more contracts to satisfy another 10 million tpy of demand by 2020.

Expanding import capacity

Poten data suggest Chinese imports climbed 61% in 2009 and 75% during the first 8 months of 2010. Since its inaugural cargo arrived at Guangdong Dapeng LNG from Australia's North West Shelf in May 2006, the country's import capacity has expanded rapidly.

CNOOC, PetroChina, and Sinopec, with local partners, have eight terminals totaling 40 million tpy of capacity either operating or under construction for completion by 2015 (see table). A further six are in advanced planning with approvals by provincial governments but not Beijing as of October, Poten data at the time showed. If all these terminals are built, China will have in place capacity to import 25 mil-

lion tpy more by 2020.

An additional 10 terminals are in various phases of preliminary planning. CNOOC alone wants to build another 6 terminals to complement the 3 it already owns. These would be located in Shantou, Jieyang, Zhanjiang, Hebei, Jiangsu, and Tianjin. PetroChina and Sinopec are planning 2 terminals each: in Qinzhou and Shenzhen and in Lianyungang and Maoming, respectively.

While CNOOC dominates the current market, Poten believes this will change once PetroChina starts up its Dalian and Jiangsu terminals in 2011 and Sinopec's Shandong terminal begins operating in 2013. PetroChina will control the market in northeast China from next year, although Sinopec will affect the Shandong area after 2013 through its Qingdao terminal.

CNOOC will continue to dominate southern and south-eastern China, said the analysis, with start-up of the Zhejiang and Zhuhai terminals in 2012 and 2013. The NDRC rejected PetroChina's planned terminal in the south at Shenzhen on environmental grounds; a new site will need to be found.

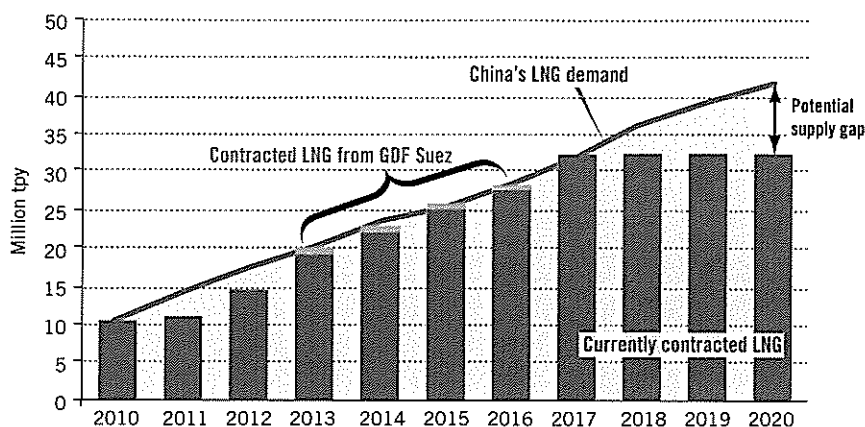
Pipeline imports

In addition to LNG, pipeline imports will play a major role in satisfying China's supply requirements, says Poten. Central Asia is the most important pipeline source in late 2010. The Central Asia-China pipeline operated by China National Petroleum Corp. starts on the border between Turkmenistan and Uzbekistan, runs through Uzbekistan and Kazakhstan, and connects to the second West-East pipeline, which will eventually extend to China's coastal regions and reach as far south as Guangdong province.

Imports through this pipeline began in 2009 and should reach 15 billion cu m/year by yearend 2010 and full capacity of 40 billion cu m/year in 2015. The purchase arrangements that underpin the Turkmen deal started with an intergovernmental agreement between Beijing and Ashgabat in 2006. CNPC and Turkmenistan then signed two agreements in 2007: a production sharing contract for Bagtyiarlyk field in the Amu Darya River Right Bank, where CNPC has discovered 1.6 trillion cu m, and a 30-year contract for 30 billion cu m/year.

In 2008, the parties raised this volume to 40 billion cu m/year. More recently, CNPC has entered into a strategic partnership with Russia's Lukoil to promote cooperation in existing gas projects: Kumkol and Severnye Buzachi in Kazakhstan and Aral in Uzbekistan. This could lead, says Poten, to increased imports from central Asia.

CHINA FACES LNG SHORTAGE



Source: Poten & Partners, LNG Consulting

Pipeline gas from Russia has yet to materialize despite years of talks. These have resulted in a series of intergovernmental understandings, as well as discussions between Gazprom and CNPC.

Negotiations cover the supply of 30 billion cu m/year over 30 years starting from 2015. But there is still no clear gas source: western Siberia, eastern Siberia, and the Russian Far East all remain possibilities. Because price continues to be a sticking point as well, first deliveries will probably slip well beyond the 2015 target date.

Although smaller in scale than the Russian project, a pipeline link from Myanmar is more advanced. The 12 billion cu m/year Sino-Myanmar pipeline will start at Kyaukryu port on the west coast of Myanmar and enter China at the border city of Ruili in Yunnan province (OGJ Online, Sept. 13, 2010). From there it will run to Kunming, the capital of Yunnan, before extending to Guizhou and Guangxi in South China.

Construction started in the middle of this year and is expected to be completed in 2013.

Unconventional gas

Unconventional gas—shale, coalbed methane, and tight sands—represents another component of China's supply plans, says the Poten analysis. Potential resources are huge, it believes, far outstripping the country's conventional gas reserves. PetroChina is developing a 3 billion cu m/year CBM project in Qinshui, in the country's largest coal province of Shanxi, and aims for 10 billion cu m/year from the Ordos basin by 2020.

CNPC, PetroChina's parent, recently signed a 30-year production-sharing contract with Royal Dutch Shell PLC to develop and produce tight gas in the Sichuan basin. The two firms have also joined in Queensland, Australia, jointly acquiring all of Arrow Energy's CBM business earlier this year.

In June, CNPC signed a memorandum of understanding with Encana Corp., Canada's largest natural gas producer, to participate in developing Encana's shale gas properties in western Canada (OGJ, July 5, 2010, p. 36).

Sinopec is targeting 2.5 billion cu m/year of unconventional gas production by yearend 2015 from acreage in Shanxi, Shaanxi, Guizhou, Anhui,

and Jiangsu provinces. It has linked up with Chevron jointly to develop shale gas in Guizhou as well. Not to be outdone, says Poten, CNOOC has signed a framework agreement with the Shanxi government on a synthetic natural gas project with capacity of 10 billion cu m/year and is planning to build a 4 billion cu m/year coal gas project at Erdos in the Inner Mongo-

lian autonomous region.

Finally, in the international sphere, CNOOC recently purchased a 33.3% interest in Chesapeake Energy Corp.'s Eagle Ford shale gas acreage in southern Texas (OGJ, Oct. 18, 2010, p. 9). It is also a minority shareholder in BG's Queensland Curtis LNG, the CBM-based project on track for completion in 2014. **OGJ**

DOI ponders ways to regulate fracking on public lands

Nick Snow

Washington Editor

The US Department of the Interior is considering whether existing regulations need to be expanded or new rules need to be developed for hydraulic fracturing and other natural gas

exploration and production activities on public lands, DOI officials said at a Nov. 30 forum at DOI's headquarters.

Interior Sec. Ken Salazar conceded in his opening remarks that the US Environmental Protection Agency, White House Council on Environmental Quality, and other Obama administra-

tion entities already are looking at the process being used to recover gas from tight shale formations. But it also matters to DOI and its US Bureau of Land Management, he added.

"We want to make sure that as gas is developed on BLM lands, it is in a way that protects the environment and other natural resources," Salazar said. "About 11% of our total domestic gas supplies are on BLM lands. We've leased about 12 million acres for gas production. It's very much a part of what we're doing here at Interior."

Fracing has become "a very hot and difficult issue" with some environmental activists and hunting and fishing groups saying it should be heavily restricted and others from the oil and gas industry and state regulators saying it has a 60-year record of safety, he continued.

"The main concern is that fracing be safe and protects the environment. We will consider issuing a policy resulting from disposal of the fluids used in hydraulic fracturing on public lands," Salazar said. "Some parts of the industry may say this should not be addressed because the information is proprietary. But there are others who believe it is essential that the information be transparent so everyone will know what's being injected into the ground. We have not settled the question at [DOI], but are carefully considering it."

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