

FSRU Tariffs Paper – Government of Pakistan

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Background

The cost of FSRUs has escalated rapidly since 2009. For example, Kuwait signed a \$150m deal in May 2008 with Excelerate Energy for 100% ownership and operatorship of a 160,000m³ 3.9MMtpa FSRU GasPort vessel brought online a year later. This contrasts with the cost of a new FSRU (without any operatorship) now estimated to be in the region of around \$300-350m. This has been partly due to higher commodity costs but also due to the increase in demand for LNG shipping in general with many LNG plants due to come online in the next few years (N.B. cost of a conventional LNG carrier is now around \$200m). Some countries have recently reported costs of implementing an FSRU project to be in the region of \$1bn, but this generally includes substantial other development costs, e.g. GdF Suez's recent (May 2013) \$1.1bn deal with Uruguay included building a breakwater.

FSRU costs – recent deals

Using the Lithuanian deal with Höegh as an example we can get a sense of the costs of only the FSRU.

In Nov 2012, Norway's Höegh LNG secured a \$250 million credit facility from four banks for the financing of a 170,000m³ 3MMtpa FSRU to be delivered to Lithuania's Klaipėdos Nafta. In Mar 2012, Höegh LNG signed an agreement to supply and operate a jetty moored FSRU by the end of 2014 for a period of ten-years at a cost of \$156,200/day.

The charter rate in the latter example is equivalent to an NPV of \$350m over the ten years (assuming a discount rate of 10%). This corresponds to a tariff to cover charter costs of c\$0.4/MMBtu at 100% load factor or \$0.7/MMBtu at a more realistic load factor of 50%. In comparison, in Aug 2011, Petrobras signed a deal with Excelerate for the long term charter of a 3.7 mtpa FSRU for \$135,000/day, equivalent to around \$0.5/MMBtu. Nevertheless, \$0.7/MMBtu is still within the range developers of recently planned FSRU projects have sought as tariffs from long term capacity users, with deals reported around a range of **\$0.6-0.9/MMBtu** for long term chartering of the FSRU.

Though charter rates are not often reported, FSRU providers have reported EBITDA of around \$50m for recent deals. Working back from this we can estimate a daily charter rate making an assumption on Opex. Höegh and Golar report EBITDA and Capex for recent deals and indicative charter rates are shown in the table below:

Project	Provider	mtpa	EBITDA (\$m)	Capex (\$m)	Opex @ 2.5% (\$m/y)	Implied Charter Rate (\$/day)	Implied tariff @ 50% LF (\$/MMBtu)
Indonesia FSRU	Höegh	2	40	300	6	126,027	0.94
Lithuania FSRU	Höegh	3	50	325	6.5	154,794	0.72
Chile FSRU	Höegh	3	41	295	5.9	128,493	0.60
Gas Atacama FSRU	Golar	3	47	400	8	150,685	0.70

FSRU costs – indicative total project costs

These charter-only tariffs do not reflect the possibly substantial additional costs associated with terminal development and connection to the local gas pipeline system.

China's first FSRU project in Tainjin, with an initial capacity of 2.2MMtpa, which is being developed by CNOOC, is reported to cost around 5.7 billion yuan (\$900 million) as at March 2012. This is equivalent to \$1.65/MMBtu but is likely to include supporting infrastructure (pipelines and jetty). The project is due to come online in October 2013 and will use GdF Suez/Höegh's Cape Ann vessel redeployed from the US NE Neptune LNG project.

In May 2013, GdF Suez was awarded the \$1.125 billion contract to build Uruguay's proposed terminal. The government of Uruguay selected GdF Suez as the recommended bidder in the tender process for a BOOT (build, own, operate, transfer) contract for the project. The project will include a 1,800ft concrete breakwater and will have a capacity of 7.3MMtpa, and will therefore also likely include onshore storage. The total cost is equivalent to \$1.25/MMBtu assuming a 50% load factor.

Ukraine has recently signed an agreement with Excelerate for the delivery of an FSRU with a capacity of 3 mtpa in 2014. Though costs of this deal are unknown the total project cost which includes 5 Bcm/yr of additional onshore storage is estimated to cost \$1billion. This is equivalent to \$1.1/MMBtu assuming a 50% load factor.

Operating costs

Höegh, Excelerate and Golar have more recently chartered majority of their FSRUs on a long term (>10 year) basis rather than selling the FSRU outright. Höegh also generally operate the FSRU as well, passing through operating costs or indexing them in the contract to the level of inflation. Operating costs are estimated to be similar to costs of operating standard LNG carriers in the range of 1-3% of total capex per annum or c. **\$0.05/MMBtu**.

Some FSRUs are designed to be mobile – i.e. they can lift cargoes from the supply plant and reconnect into the STL offshore buoy (through the hull of the ship) or the high-pressure gas pipeline if dockside (through the offloading arm) at the market. These are typically termed 'Fast Track' projects. An example of this is Excelerate's GasPort at Teesside in the UK. In such cases, the FSRU provider is likely to charge an additional fee for this service. Fees are likely to be based on LNG carrier charter rates at the time, currently these are between \$75,000/day and \$90,000/day, which could add a further **\$0.3-0.5/MMBtu**.

Conclusions

Total non-commodity costs of importing a cargo of LNG, storing it in a FSRU, regasifying and sending it into the gas network is likely to be in the region of around **\$1.1-1.5/MMBtu** or \$250-300k/day. This includes the costs of operating the FSRU and shipping to and from a nearby (up to 1000NM) supply source, but excludes any substantial costs of developing infrastructure such as the jetty or local gas network connections.

Recent total project costs for a 10 Bcm/yr (7.3 mtpa) project which includes an FSRU and infrastructure (jetty and pipelines) has been reported to be around \$1billion. However this has included breakwaters and onshore storage which may not be applicable to a project in Pakistan.