

Tudor Pickering Holt Energy Thoughts (5-9-08, Friday)

Revised US LNG outlook for 2008 (\$11.30/mcf)

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- *Overview* – Investors should care about LNG imports as they are a key component, on the margin, of the overall US gas market. Nine months ago, we thought 2008 US LNG imports would be up 1bcf/day y/y (to 3bcf/day). We couldn't have been much more wrong as today it looks like 2008 will be down 0.7bcf/day y/y (at 1.3bcf/day). Obviously bullish on the margin for US natural gas pricing. The swing of 1.7bcf/day in our forecast is explained in the following manner: Global LNG supply problems/disruptions ~0.4bcf/day, colder than normal global winter primarily Asia/Europe ~0.8bcf/day, increased Asian demand following nuclear outages ~0.5bcf/day. Read on for the details and implications of the current LNG outlook.
- *U.S. market of last resort* – As we wrote about in detail in our February 2007 LNG piece, the U.S. market is the LNG market of last resort as our country has the most sophisticated pipeline/storage grid in the world. When no one else needs LNG, cargoes flock to U.S. shores. With nuclear outages, current high oil pricing, Spanish droughts, liquefaction (supply) problems, there won't be much excess LNG available this summer for the U.S. market. As such, we're lowering our '08 import forecast from 2bcf/d to 1.3bcf/d (Q1A 0.8bcf/d; Q2E 1.2bcf/d; Q3E 1.8 bcf/d; Q4E 1.2bcf/d)..this is down from 2bcf/d last year. Lower LNG imports are part of the equation that results in an end-of-season gas storage forecast of 3.25Tcf (last year 3.5Tcf). Puts upward bias to our \$8.85/mcf '08 price deck (and somewhat already reflected in current \$11.30/mcf spot price and \$11.50/mcf 12mth strip).
- *What's changed over last year?* Earthquakes, droughts, uber cold global winter, record oil prices, oh my! Call us Captain Obvious, but events over the past 12 months made the global natural gas market one complex beast. Near record cold winters in Asia-Pac fueled dramatic increase in LNG usage, with Japan/South Korea paying north of \$23/mcf for cargoes during peak demand periods. Europe also had prolonged visit from Old Man Winter as European storage continued to draw through the month of April (historically beginning of injection period). With European storage levels near ~40% full today, Europe will continue to pull LNG cargoes as it works to rebuild storage. Spain is also suffering from severe drought (40% less rain than normal since October), which could impact hydro-power this summer. Recent rainfall has helped ease situation, but we continue to monitor closely as lingering drought could pull incremental 0.5-1bcf/d of LNG to Spain through the summer. While winter is behind us, both Japan and Korea have ongoing nuclear outages, which continue to take incremental cargoes. Last July, an earthquake shut down a huge Japanese nuke plant (8.2GW, 7 reactors). As we had thought, the gap has been filled by burning fuel oil (2/3) and LNG (1/3). This facility remains offline (likely through at least 2008), so Japan is taking an incremental 0.5bcf/d from the spot LNG market.
- *Liquefaction problems 2008* – Existing LNG supply trains continue to have unscheduled down time during 2008. Nigeria and Trinidad both increased planned maintenance time. Even more perplexing is Indonesia. After LNG output fell by 0.5bcf/d in 2007, the country has published conflicting reports about the 2008 forecast. One shows an additional 1bcf/d y/y decline, while a second report shows LNG production actually up 0.3bcf/d. Too early to tell, but we're willing to take the "under" as Indonesia's aging fields have failed to meet export commitments over the last few years. While there are lots of new liquefaction plants under construction, bringing these giant freezers online on-time and on-budget is proving to be increasingly difficult. Snohvit (0.6bcf/d; Norway) is a prime example. Although it initially started up on time in September 2007, Snohvit has produced very few cargoes and has continually been plagued by problems. Now, only 8 months later, the facility has been closed *again* for 8 weeks of repairs. Should be back online by late June, but we think it will likely continue to operate at only 50% capacity for 2008. For reference, a typical train should take only 3-6 months from initial commissioning to ramp up to full capacity. During 2007, only 4

trains (2.3bcf/d) were commissioned (RasGas II T-5 0.6bcf/d; Eq. Guinea 0.5bcf/d; Bonny T-6 0.6bcf/d; and Snohvit). At this point RasGas and EG are running at full capacity while Bonny T-6 is completing ramp-up after YE'07 start date. With 12.7bcfe/d of new liquefaction scheduled to be online by YE 2011, let's hope that Snohvit is the exception to the rule. In our global supply and demand model, we assume facilities are ramped up 6 months after start-up date and newbuilds operate at ~95% utilization.

- *Liquefaction construction delays* – We're obviously watching each of the 14 trains (12.7bcf/d) under construction around the globe as every delay matters on the margin. Qatar offers case study in massive global E&C build-out. Delays shouldn't be that surprising given rising construction costs/tight labor market and the fact there are 6 trains currently being built in Qatar (each 1bcf/d). RasGas T-6 delayed from 4Q08 to 1Q09 with T-7 being pushed from mid'09 to Dec09. 1bcf/day QatarGas III delayed from 2009 to 2010. Delayed projects will limit LNG available to U.S. during summer 2009 (Asian/European winter weather remains most important variable). Next datapoint, QatarGas II T-4, which is scheduled to begin commissioning process in June with expected full production ~3-6 months later.
- *Global arbs* – While every LNG train operates under a long-term contract, a "spot market" does exist. The spot market consists of either cargoes produced in excess of the contract or the "flexible destination" clauses of contracts which let the buyer/seller put the gas into the spot market for a share of the excess profit. Today, spot market pricing for Asia-Pac is \$12-14/mcf, Spain \$12/mcf; UK \$11.70/mcf and the U.S. \$11.40/mcf. Until global arbs open to U.S. cargoes, we do not expect to see a dramatic ramp in U.S. imports. The UK arb is now only -30c/mcf well below April's average of -\$1.74/mcf. As such we've started to see activity in the US at Elba Island where BG delivers cargoes. Market chatter would indicate Cove Point imports will also increase in June. We believe the U.S. will also begin to see an increase in Trinidad imports in June given Trinidad's lower transportation costs (~30+c/mcf lower from Trinidad to Gulf Coast vs. UK). *U.S. vs. U.K. global arb chart available upon request.*
- *Long term contract pricing evolution* - Five years ago a typical contract price for LNG would be 80% of the Japanese Crude Cocktail (JCC) with a maximum cap on oil price of \$50-60/bbl. Today, a typical contract is 88% of the JCC with a maximum cap on oil price of \$150-200/bbl. So with an oil price at \$125/bbl, this equates to a contract price of \$18.30/mcf. Highlighting how tight the LT global gas market is perceived, in January, the Japanese actually allowed Woodside's NW Shelf Project to re-negotiate any contract signed before 2006 to increase the price range (no change to % of JCC). Haven't yet seen any other examples of this...but clearly the Japanese want happy suppliers as they look to future long-term agreements. With U.S. natural gas pricing well below 88% of oil parity (\$18.30/mcfe at \$125/bbl oil), it is easy to see why no long term contracts have been signed for U.S. ports without flexible destination clauses. We'll say it again...the U.S. remains market of last resort for global LNG market.
- *Status of U.S. terminals* – Doesn't take rocket scientist to realize that our 1.3bcf/d U.S. import forecast won't fill the current 10bcf/d US regas capacity (12.6bcf/d by YE '08). So far this year, two new facilities have already been commissioned, Sabine Pass (2.6bcf/d) and Freeport LNG (1.5bcf/d) with another 3 on tap for later this year: Excelebrate's NE Gateway (0.4bcf/d); Dominion's Cove Point (expansion to 1.8bcf/d from 1bcf/d) and Semptra's Cameron (1.5bcf/d). By YE 2010, the U.S. will have 17.4bcf/d of regas capacity. Owners of these terminals are probably the only people you'll find that don't like US gas supply growth from shale plays. We've said it before, we'll say it again... many of these terminals will sit idle for most of the year.
- *Implications for U.S. terminals* – With so much capacity and so little LNG finding its way to U.S. shores, obvious conclusion – many terminals will be idle/meaningfully underutilized. Globally, regas units tend to run ~50% utilization, however, we believe most U.S. terminals will remain well below that level in '08. So which terminals win/lose? Winners are part of vertically integrated global gas firms which should have better basis and/or long term

contracts that pay regardless of volumes (Everett, Elba, Cove Point, Lake Charles, Freeport). Losers for '08 are likely to be those terminals in the spec market - Exceleerate NE/Gulf Coast and Cheniere's Sabine Pass. Cheniere's 2 long term contracts with CVX/TOT do not begin until 2009, therefore, we do not believe Sabine Pass will receive any additional cargoes in 2008 (they offloaded 1 commissioning cargo in April). Also worth mentioning that Lake Charles will be shut down starting May 22 thru mid-June for scheduled upgrades (last year imported ~1.5bcf/d during that period). With so much spare capacity in U.S., doubtful BG will miss that terminal being offline.

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