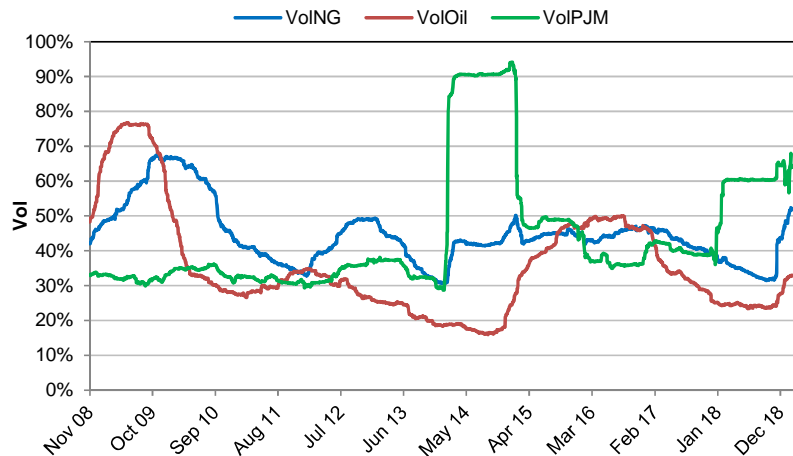


U.S. SA-CCR Supervisory Factors for Energy Derivatives

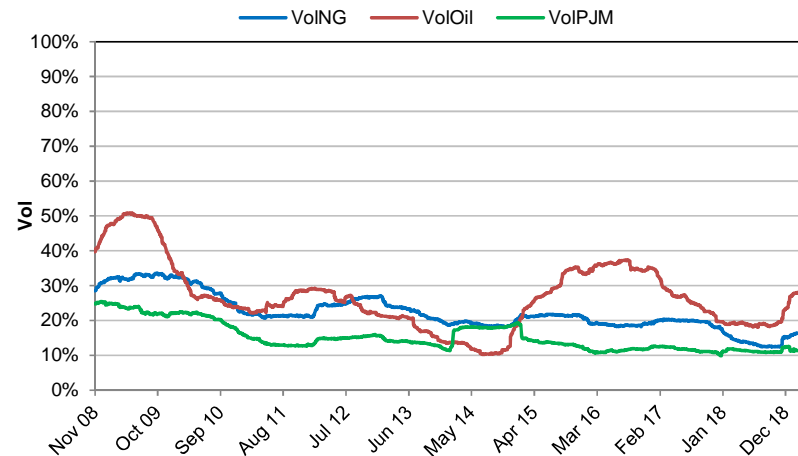
A 10% Energy SF would align with forward contract credit risk evidence

- Supervisory factors should represent the period of risk being managed. As a result, forward market volatility is more appropriate for the calibration of supervisory factors

Energy asset class front month contract market volatility



Energy asset class front two years forward market volatility



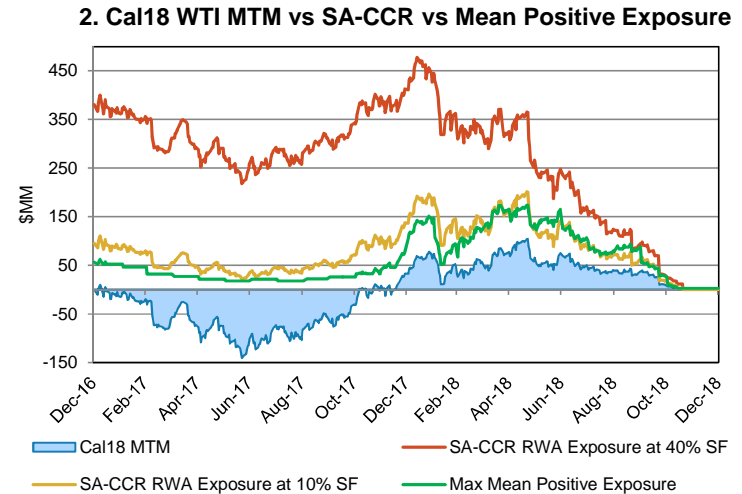
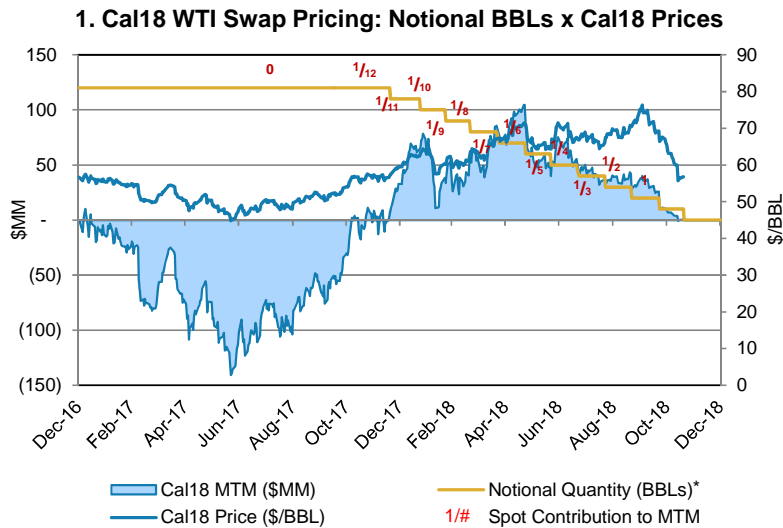
- Electricity and Natural Gas, over the historical period have demonstrated relatively low volatility when measured using forward market history.
- Using historical data, MS provided data and calculations to support a 10% calibration in our public comment letter

Asset category	Calendar year of greatest volatility	Standard deviation of forward markets in calendar year of greatest volatility	Implied Supervisory Factor
Electricity	1/1/08-12/31/08	24%	6%
Oil	1/1/08-12/31/08	47%	13%
Natural Gas	1/1/09-12/31/09	32%	9%

U.S. SA-CCR Supervisory Factors for Energy Derivatives

A 10% Energy SF would align with credit risk in energy derivative transactions

Oil



- Energy derivative counterparty credit risk exposures decline, month by month, as the transaction nears maturity since the remaining total notional quantity declines
- A bank's counterparty credit risk exposure is determined with reference primarily to obligations across the remaining months—not spot market volatility in the current month
- If a counterparty defaults before transaction maturity, the bank calculates its close-out exposure with reference to forward contract prices for each of the remaining months (i.e., a counterparty default does not result in a bank being exposed to spot market prices at close-out)
- A 10% Supervisory Factor correctly aligns SA-CCR credit risk measurements with other reliable counterparty credit risk measures (i.e. max mean positive exposure)
- This alignment remains accurate during both positive and negative mark-to-market periods
- A 40% Supervisory Factor would materially diverge from other reliable counterparty credit risk measures

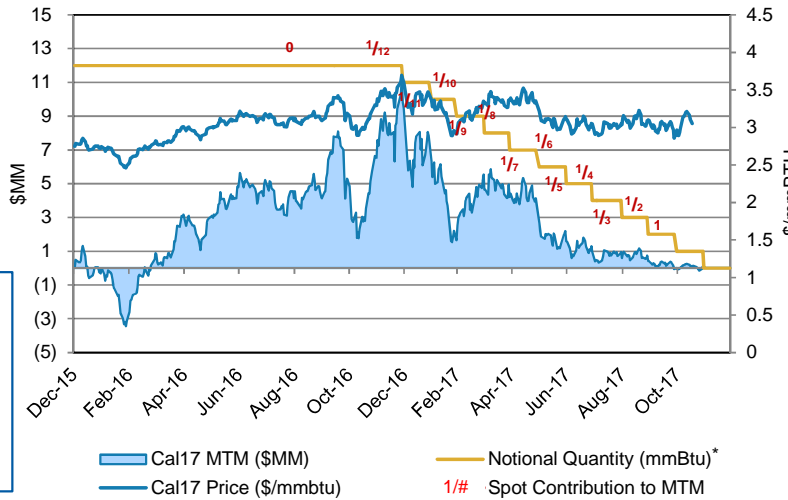
*The notional amount in this example is 1 million Barrels of Oil (BBL) per month for 1 year, or 12 million BBL at execution. The notional value is constant for the first year and then declines by 1 million BBL per month in the second year. The notional value does not correspond to the vertical axis amounts but is included to show the relationship between notional value, market prices and mark-to-market (MTM) values.

U.S. SA-CCR Supervisory Factors for Energy Derivatives

A 10% Energy SF would align with credit risk in energy derivative transactions

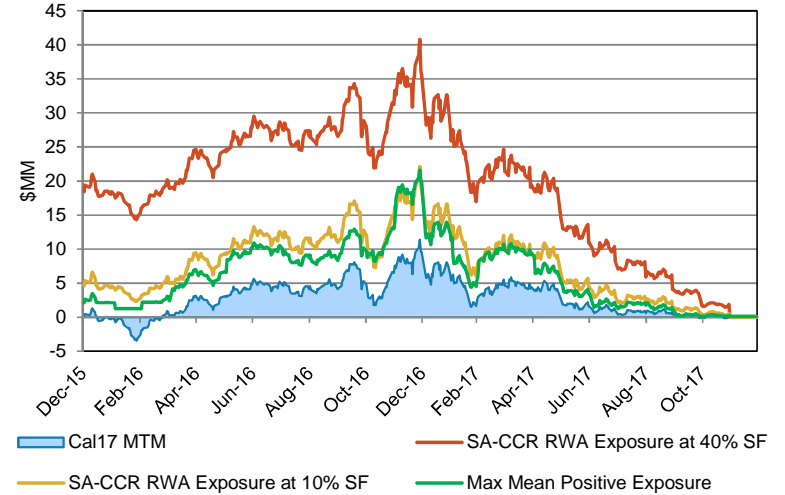
Natural Gas

1. Cal17 Henry Hub Swap Pricing: Notional MMBTU x Cal17 Prices



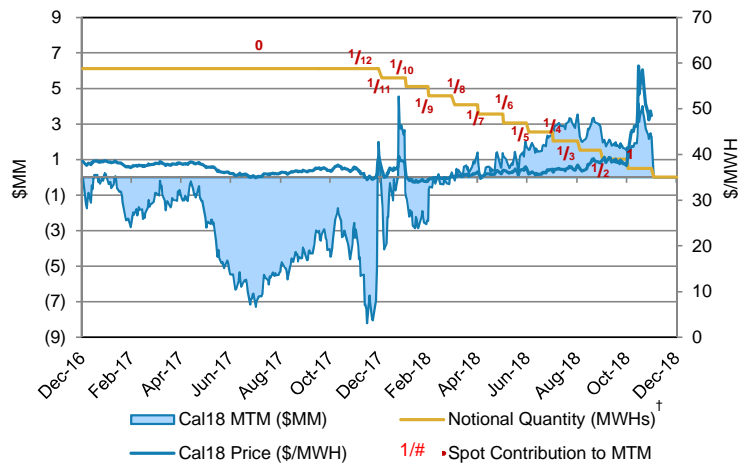
*Same notional principles as prior slide. In this example, the notional amount is 100 lots (1 million British Thermal Units (mmBTU) per month for 1 year.

2. Cal17 Henry Hub MTM vs SA-CCR vs Mean Positive Exposure



Electricity

3. Cal18 PJM Peak Swap Pricing: Notional MWhs x Cal18 prices



†Same notional principles as prior slide. In this example, the notional amount is 170 thousand megawatt hours (MWh) per month for 1 year

4. Cal18 PJM Peak MTM vs SA-CCR vs Mean Positive Exposure

