#38518

DATE: **MARCH 1, 2016**

SUBJECT: **IMPLIED VOLATILITY MODELING MARGIN ENHANCEMENT**

OCC announced on July 2, 2015 via Information Memo 37036 that the clearinghouse planned to introduce implied volatility modeling enhancements to OCC's margin methodology, STANS, to better capture vega risk (i.e., changes in option implied volatilities). OCC has received regulatory approval for this modeling change[1] and is planning to implement the enhancement for settlement date April 5, 2016.

Clearing Members can review pro forma margin results that reflect this planned change by going to the MyOCC website and using existing login and password information. These pro forma results begin on January 4, 2016 and extend to February 5, 2016 with additional dates to be provided over the coming weeks. OCC intends to provide pro forma results in near real-time as the expected implementation date nears so members can better prepare for the impact on margins, collateral and settlements.

After access to MyOCC has been granted, users can access the Training External ENCORE environment as follows:

- Select the 'MyOCC Training' link from the Alt Environments tab to access the Training MyOCC page. 'Training' will be displayed at the top of this page.
- Select the 'Launch ENCORE' button from the upper right hand area of the page. 'OCC / ENCORE / train' will be displayed at the top of the External Encore window that opens.
- If a user encounters a security certificate along the way, accept it.

Users encountering issues with, or lack of, ENCORE access should contact Member Services at (800) 621-6072.

The Training External ENCORE environment makes available the following reports for user review:

- Daily Margin Reconciliation – reports daily margin requirement at OCC
- Daily Margin Summary and Daily Margin Detail – report risk factor and position data included in the Daily Margin Reconciliation margin requirement
- Margin Memo – Collateral Reconciliation – reports margin requirement at OCC excluding valued security and certain government security collateral deposits

[1] http://www.sec.gov/rules/sro/occ/2015/34-76781.pdf

- Margin Memo – Collateral, Stock Loan & Repo Reconciliation – reports margin requirement for broker-dealers members used in the SEA 15c3-3 Customer Reserve computation

If you have any questions regarding this memo, please contact your Credit Risk Analyst. Clearing Members may also e-mail creditriskanalysts@theocc.com.

IMPLIED VOLATILITY MODELING SUMMARY FROM INFORMATION MEMO 37036

When considering the risks associated with a portfolio comprised of options transactions, it is also important to measure the potential change in the value of the portfolio caused by changes in the options' implied volatility surface. This volatility, or vega, risk is dynamic and can have a material impact on the value of a portfolio with options. While STANS currently includes scenarios related to changing implied volatilities for options on the S&P 500 Index with tenors beyond three-years, this effort will expand on that approach and provide a quantitative approach to model implied volatility that covers all options spanning all tenors, with the exception of a few options that either had de minimis open interest or whose introduction to OCC as a new product is sufficiently recent as to not have been able to be captured in this implementation.

To manage the vega risk associated with clearing member portfolios, OCC will utilize a nine point model to describe the volatility surface for equity and index options in a manner consistent with their simulated underlying price movement for an option contract provided by the Monte Carlo simulation. The nine axis points are modeled at distinct positions related to percentages of moneyness (or delta) and tenor (or expiration cycles). Through this approach, the model is able to capture the potential volatility exposure associated with a portfolio given changes in the (1) level (or shifts), (2) skewness, (3) convexity and (4) term structure of the implied volatility surface. On a daily basis OCC will supplement its historical database of implied volatilities by deriving the volatilities implied by the closing option market prices after having been cleansed for erroneous and arbitrage prices. This modeling approach requires the daily time series going back five hundred days for each of the implied volatility values to model the nine point volatility surface.

To compute margin requirements, OCC's econometric models will simulate implied volatility returns (shocks) at these nine points on the surface corresponding to each of the 10,000 underlying price simulations produced within STANS. A theoretical implied volatility value in each option contract scenario is calculated by (1) choosing the initial volatility by linear interpolation in the option's vertical group based on the underlying price change and (2) applying to it a corresponding shock from the nearest point on the volatility surface. The final theoretical value is calculated as usual using the simulated change in price and the theoretical implied volatility value of the option contract, which will determine that scenario's profit / loss for each option.