Exhibit 35

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NSCC RISK MARGIN COMPONENT GUIDE

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Important Notice

This document and the information described herein is provided as a convenience to NSCC Members and is for informational purposes only. This document should not be regarded as a definitive or exhaustive description of NSCC's clearing fund methodology or risk-management framework; nor should it be regarded as a substitute for the NSCC Rules and Procedures ("Rules"), which governs in all respects the relationship between NSCC and its Members. Members should refer to the NSCC Rules for a complete statement of NSCC procedures, rights, obligations, and requirements.

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This document may be amended at any time without prior notice and the risk-management practices described herein may be changed at any time without update to this document.

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Introduction

On a daily basis NSCC calculates a Clearing Fund requirement for each Member based upon their unsettled and pending transactions, using the prior day's securities closing market price. The formula uses a risk-based methodology and includes a number of components.

Some of these components are described in this document, including the volatility charges, mark-to-market charges, fail charges (for CNS transactions), a charge for Family-Issued Securities to mitigate wrong way risk, a charge for Illiquid Positions, a charge to mitigate day over day margin differentials, a coverage component, and a Backtesting Charge. In addition, NSCC may impose a premium charge when a Member's Required Fund Deposit exceeds its excess net capital.

Not all required components to the Clearing Fund or other Clearing Fund deposit requirements are described in this document; NSCC may require additional deposits to a Member's Clearing Fund, as described in the NSCC Rules.

1 Volatility Component

1.1 Overview of Methodology

The volatility component of each Member's Required Deposit is designed to measure market price volatility and is calculated for Members' Net Unsettled Positions. The volatility component is designed to capture the market price risk associated with each Member's portfolio at a 99th percentile level of confidence.

The volatility component applicable to most Net Unsettled Positions is calculated utilizing a parametric Value-at-Risk ("VaR") model and is referred to as the VaR Charge. Net Unsettled Positions in certain securities are excluded from this calculation and are instead charged a haircut-based charge as the volatility component.

The volatility component usually comprises the largest portion of a Member's Required Deposit. The volatility component is described in Procedure XV, I(A)(1)(a) and I(A)(2)(a) of the NSCC Rules.

1.2 In-Scope Products and Process

Securities that are eligible to be cleared at NSCC can generally be classified into two broad categories: equity and fixed income instruments. Equity securities can be considered either liquid or illiquid, which include, for example, IPOs. Fixed income securities can include, for example, corporate bonds, municipal bonds and other types of securities that are non-corporate/non-municipal securities. Examples are unit investment trusts, preferred stock, or other fixed income securities that are amenable to generally accepted statistical analysis only in a complex manner.

Generally, liquid equity securities are subject to the VaR Charge, which uses a parametric VaR approach with a number of flooring mechanisms which each targets specific risk drivers; and both illiquid equity securities as well as fixed income securities are subject to a haircut-based volatility charge.

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1.2.1 Equity Margining

All equities, other than those that are "Illiquid Securities", as defined in the NSCC Rules are classified as liquid securities. In general, these securities include securities that are traded on the national securities exchanges with its first available price more than 30 business dates ago in the FAME historical price file over the past 153 business days. These securities are subject to the VaR Charge, which utilizes a parametric method with additional components of a Volatility Floor, Gap Risk, and Margin Floor.

In general, other equity securities traded on a national securities exchange that does not meet the available pricing criteria is classified as an Initial Public Offering ("IPO"). Securities for which there is no price data from the FAME historical price file for the day are generally considered Illiquid Securities. Securities that are not listed on a national securities exchange and are traded in over-the-counter marketplaces will also be defined as Illiquid Securities. A haircut-based charge is applied as the volatility component for both the IPO and equities that are considered Illiquid Securities.

1.2.2 Fixed Income Margining

There are generally three categories of fixed income securities that are eligible to be cleared at NSCC: (1) corporate bonds, (2) municipal bonds, and (3) other fixed income securities (non-corporate/non-municipal securities. A haircut-based volatility charge applied to all fixed income securities. Specific haircut rates depend on the category of the security.

The haircut rates for corporate bonds are derived from the maturity/credit rating category into which that bond is classified. There are currently 36 maturity/credit rating categories. For municipal bonds, the haircut rates depend on bond maturity, credit rating and the bond's sector. All other non-corporate/non-municipal bond fixed income securities are subject to a single haircut rate.

Under the NSCC Rules, NSCC may exclude other securities from the application of the VaR Charge and instead apply a haircut-based volatility charge.

1.3 Equity Volatility Component Calculations

1.3.1 VaR Charge

NSCC uses a parametric VaR methodology to calculate the VaR Charge. Parametric VaR is assessed by simultaneously calculating four separate VaR types – (i) an exponentially-weighted moving average ("EWMA") volatility estimation, (ii) an evenly-weighted volatility estimation, (iii) a gap risk measure, and (iv) a portfolio margin floor. The highest resultant value among all of the parametric VaR calculations becomes the surviving parametric VaR that is applied to the start-of-day liquid equity position.

Parametric VaR Calculation

The parametric VaR for a given Member's liquid security portfolio, VaR_P, is calculated as follows:

$$VaR_P = f_{fat-tail} \times 2.327 \times \sqrt{3} \times \sqrt{Variance(P)}$$

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where 2.327 represents the 99th percentile of the Normal distribution, $\sqrt{3}$ is a time scaling factor for the 3-day risk horizon, and $f_{fat-tail}$ is an adjustment factor from Normal distribution to corresponding Student's t distribution.

Note that the variance is calculated with a decay factor and a lookback period, as follows:

$$Variance = \frac{1}{\Theta}\sum_{k=0}^{\omega-1}\lambda^k\left(\sum_{i=1}^{N}\left(v_i \times r_i(k)\right)\right)^2$$

where

λ: decay factor

ω: look-back window size for EWMA decay factor

$r_i(k)$: the 1-day return of the ith equity in the portfolio on the kth day counting backward, based on FAME corporate action adjusted historical prices

v_i: the position value of the ith equity in the portfolio

and

$$\Theta = \sum_{k=0}^{\omega-1}\lambda^k$$

The core parametric VaR is the larger of the base VaR and the Volatility Floor, where

1. the base VaR is calculated with $\lambda = 0.97$ and $\omega = 152$
2. the Volatility Floor is calculated with $\lambda = 1$ and $\omega = 252$

Gap Risk

The gap risk measure is designed to ensure that NSCC collects enough margin to cover the idiosyncratic price movement of the most concentrated position in the guaranteed portfolio.

First, a concentration threshold is determined by conducting portfolio-level backtesting over a look-back period of not less than the previous 12 months.[1]

1 This concentration threshold is 10.0% as of the publication date of this document; this threshold may change from time to time.

Second, if the absolute value of the largest non-index position in the portfolio exceeds the concentration level, the charge is determined by taking the gross market value of the concentrated position and multiplying by a percent.[2]

NSCC defines the gap risk as follows:[3]

$$gap\ risk(c,g) = g \times \max_i |MV_i| \ (where \frac{\max_i |MV_i|}{\sum_i |MV_i|} > c)$$

where

c = concentration level, which is the % threshold of the top non-ETF concentrated position in the portfolio, beyond which Gap Risk would be assessed for the portfolio.

g = gap size, which is the haircut applied to the top concentrated position in the portfolio.

MV_i = market value of position i.

Margin Floor

To address the remaining idiosyncratic and other risk factors in the portfolio not accounted for in the other VaR calculations, NSCC utilizes a portfolio-level margin floor, parameterized as a combined margin haircut on the value of net directional market exposure and the value of balanced market exposures, respectively. These margin haircuts are equivalent to the reciprocal of the directional or balanced Leverage Ratios.

First, the net directional market value of the portfolio is calculated by taking the absolute difference between the market value of the long net unsettled positions and the market value of the short net unsettled positions in the portfolio and then multiplying that amount by a percentage.[4]

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2 NSCC determines such percent empirically as no less than the larger of the 1st and 99th percentiles of three-day returns of a set of CUSIPs that are subject to the volatility component, giving equal rank to each to determine which has the highest movement over that three-day period. NSCC uses a look-back period of not less than ten years that includes a one-year stress period. If the one-year stress period overlaps with the look-back period, only the non-overlapping period is combined with the look-back period. The result is then be rounded up to the nearest whole percentage. Currently, as of the publication date of this document, the calculation uses 16%, and this is subject to change.

3 While positions in ETPs are generally excluded from the calculation of the Gap Risk measure, NSCC does maintain a list of ETPs that will be subject to Gap Risk measure.

4 NSCC determines the applicable percentage by examining the annual historical volatility levels of benchmark indices over a historical look-back period.

Second, NSCC calculates the balanced market value of the portfolio by taking the lowest absolute market value of long net unsettled positions and short net unsettled positions in the portfolio and then multiplying that value by a percentage.[5]

More specifically,

$$margin\ floor(HC_d, HC_b) = GMV_d \times HC_d + GMV_b \times HC_b = \frac{GMV_d}{LV_d} + \frac{GMV_b}{LV_b}$$

where

HC_d[6]: haircut rate on directional market value

HC_b: haircut rate on balanced market value

GMV_d: directional gross market value, $||GMV_{long}| - |GMV_{short}||$

GMV_b: balanced gross market value, $min(|GMV_{long}|, |GMV_{short}|)$

Final Parametric VaR

NSCC takes the highest result of the calculation of the core parametric VaR, the Gap Risk measure and the margin floor as the final parametric VaR Charge.

NSCC calculates the Parametric VaR at the individual Account level and sums up to the Member level.

Missing Security Return Backfiling

In calculating the VaR Charge, if the price return cannot be computed for a security due to inaccurate or incomplete data, the following procedure is followed:

- Calculate the front weighted correlations of this CUSIP with the list of indexing CUSIPs in the table below as follows:

  Step 1: Exclude any index ETF CUSIPs with less than n days of price history from FAME, where n is the length of the estimation window.

  Step 2: Calculate 1-day log returns for each CUSIP as well as the index ETF for each historical business day

  $$r_t = \ln\left(\frac{p_{t+1}}{p_t}\right) \qquad \text{(Eqn. 1.3.1.1)}$$

  where P_t represents the historical price on business date t.

5 NSCC determines the applicable percentage to be an amount that covers the transaction costs and other relevant risks associated with the positions in the portfolio.

6 Haircuts are equivalent to the reciprocal of Leverage Ratios (LV).

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Step 3: For each CUSIP and index ETF pair (*i, I*), calculate the correlation:

1. Calculate the front-weighted mean of each CUSIP and index ETF pair

$$\overline{r_i}(T_0) = \frac{1}{\sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1}} \sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1} \times r_{i,T_0-k} \qquad \text{(Eqn. 1.3.1.2)}$$

$$\overline{r_I}(T_0) = \frac{1}{\sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1}} \sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1} \times r_{I,T_0-k} \qquad \text{(Eqn. 1.3.1.3)}$$

where *i* represents CUSIP and *I* represents index ETF, T_0 stands for date of the calculation, and *N* is the number of days between the earliest date when a return was calculation in step 2 and T_0 -- 1 for CUSIP. And I_{T_0-k} is the indicator function and

$$I_{T_0-k} = \begin{cases} 0, when\ r_{i,T_0-k}\ is\ missing \\ 1, \qquad otherwise \end{cases} \qquad \text{(Eqn. 1.3.1.4)}$$

As any missing return will have no contribution to the mean calculation, any missing return in the mean calculation can be simply filled with zero. θ is default to the same decay factor as the VaR Charge. Please note that the same indicator function is used in both (Eqn. 1.3.1.2) and (Eqn. 1.3.1.3).

2. Calculate the front-weighted standard deviation and covariance

$$\sigma_i(T_0) = \sqrt{\frac{1}{\sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1}} \sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1} \times \left(r_{i,T_0-k} - \overline{r_i}(T_0)\right)^2} \qquad \text{(Eqn. 1.3.1.5)}$$

$$\sigma_I(T_0) = \sqrt{\frac{1}{\sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1}} \sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1} \times \left(r_{I,T_0-k} - \overline{r_I}(T_0)\right)^2} \qquad \text{(Eqn. 1.3.1.6)}$$

$$\sigma_{i,I}(T_0) = \frac{1}{\sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1}} \sum_{k=1}^{N} I_{T_0-k} \times \theta^{k-1} \times \left(r_{i,T_0-k} - \overline{r_i}(T_0)\right) \times \left(r_{I,T_0-k} - \overline{r_I}(T_0)\right) \qquad \text{(Eqn. 1.3.1.7)}$$

where $\overline{r_i}(T_0)$ and $\overline{r_I}(T_0)$ are calculated in (Eqn. 1.3.1.2) and (Eqn. 1.3.1.3) separately, and I_{T_0-k} is specified in (Eqn. 1.3.1.4). As mentioned, that there is no impact on the variance or covariance, the missing return can be simply filled with zero. $\sigma_I(T_0)$ is calculated differently for different r_i series when having less than n returns. The r_{I,T_0-k} terms in $\sigma_I(T_0)$ calculation must match r_{i,T_0-k_i}. In other word, I_{T_0-k} is determined by if r_i is missing and shared across Eqn. 1.3.1.5, Eqn. 1.3.1.6 and Eqn. 1.3.1.7 above.

3. Calculate the correlation

$$Corr_{i,j}(T_0) = \frac{\sigma_{i,j}(T_0)}{\sigma_i(T_0) \times \sigma_j(T_0)} \qquad \text{(Eqn. 1.3.1.8)}$$

where *i* represents the *i*-th CUSIP, *j* represents the *j*-th index ETF.

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CUSIP	Type of CUSIP	SYMBOL	DESCRIPTION
46090E103	Liquid	QQQ	PowerShares QQQ Trust, Series 1 (ETF)
78467X109	Liquid	DIA	SPDR Dow Jones Industrial Average ETF
78462F103	Liquid	SPY	SPDR S&P 500 ETF
81369Y605	Liquid	XLF	Financial Select Sector SPDR (ETF)
81369Y506	Liquid	XLE	Energy Select Sector SPDR (ETF)
464287655	Liquid	IWM	iShares Russell 2000 Index (ETF)
78462F103	IPO & illiquid	SPY	SPDR S&P 500 ETF

- Select the index ETF CUSIP with the maximum correlation. i.e. $max\,(abs(correlations))$
- If this indexing CUSIP has a correlation value greater or equal to the value of the CutoffCorrelation parameter, then replace the missing return with the return of the index times the SIGN of the correlation between the index and the individual CUSIP. The initial value of the CutoffCorrelation is set to 0.3.
- If this indexing CUSIP has a correlation value of less than the value of CutoffCorrelation parameter, then replace the missing return with a zero.
- This can be expressed as:

```
if max(abs(correlation)) >= CutOffCorrelation
then if correlation>=0, then replace it with indexing-CUSIP-return
                        else replace it with (-1 * indexing-CUSIP-return)
else replace it with 0
```

1.3.2 Illiquid Equity and IPO Haircut Volatility Charge

NSCC excludes IPO equities and equities that are Illiquid Securities from the VaR Charge and instead charges a flat percentage of not less than 10.0%. The current haircut rates are shown in the table in Appendix A, and are subject to change from time to time.

For IPOs, NSCC currently uses a haircut of 15%. Mathematically,

$$chrg(IPO) = 0.15 \times \left(\sum_{v\ is\ IPO} |v| \right)$$

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For Illiquid Securities, NSCC currently uses a haircut of 20%. Mathematically,

$$chrg(Illiquid) = 0.2 \times \left(\sum_{v \text{ is Illiquid}} |v| \right)$$

NSCC calculates the haircut charges on Illiquid Securities and IPO equities at the individual Account level and sums up to the Member level.

1.4 Fixed Income Volatility Component Calculations

NSCC calculates the haircut-based volatility charge on fixed income securities at the individual Account level and sums up to the Member level.

1.4.1 Calculation Methodology for Corporate Bonds

Corporate bonds are categorized into 36 buckets by Illiquid Security Group Code according to their time to maturity and credit rating. In order to capture the idiosyncratic risk and illiquidity of different bonds within each category, percentiles greater than 99.0% are chosen for haircut calibration. In addition, NSCC uses a 10-year look-back window plus a calendar year of stress period in the haircut rate calibration. For the days that the stress period overlaps the look-back window, the data used for calibration is 10 years plus the non-overlapping days in the stress period. The corporate bond haircut is recalibrated quarterly. Please see Appendix B for a detailed breakdown of the indices and parameters that are currently utilized, as of the publication date of this document.

The total volatility charge for positions in corporate bonds is equal to the sum of charges for each category, as described below:

$$chrg(corporate\ bonds) = \sum_{i=1}^{36} \left(hr_{long}(i) \times |v_{long}(i)| + hr_{short}(i) \times |v_{short}(i)| \right),$$

where $v_{long}(i)$ and $v_{short}(i)$ are respectively the total market values in USD of long and short positions in bucket i.

1.4.2 Calculation Methodology for Municipal Bonds

For each Member, the volatility charge for positions in municipal bonds are calculated at the CUSIP-level. Municipal bonds are grouped according to credit rating, remaining time to maturity and separately categorized by municipal sector.

NSCC assesses a percentage haircut rate for each group based on (1) the historical returns of applicable benchmark indices, such as tenor-based indices (i.e., based on time to maturity), municipal bond sector-based indices, and high-yield indices; (2) a pre-determined look-back period no shorter than 10 years, plus a calendar year of stress period in the haircut rate calibration; and (3) a pre-determined calibration percentile, no less than 99%. The municipal bond haircut rate is recalibrated quarterly.

The charge for a Member is obtained by aggregating the CUSIP-level charge contributions:

$$Muni\ Bond\ Chrg = \sum_{muni\ bonds\ b\ in\ part.portfolio} hrc(b) \times ABS\big(USD\ Position\ Amount(b)\big)$$

The haircut rate $hrc()$ for a municipal bond is first determined by the remaining time to maturity measured in months, as of the most recent EOD prior to the process date, as shown in the table listed in Appendix C.

If the maturity date is unavailable, the haircut rate is set to that of longest tenor category.

For municipal bonds that are rated BBB+ or lower, or are not rated, the applicable haircut rate is derived from the maximum of the applicable tenor-based index, municipal bond sector-based indices and a high-yield index.

Current sectors include: (1) Utilities; (2) Government; (3) Healthcare; (4) Land Backed; (5) Transportation; (6) Tobacco; (7) Higher Education; and (8) Housing.

1.4.3 Calculation Methodology for Other Fixed Income Securities

All fixed-income securities that are not classified as corporate bonds or municipal bonds are subject to a single, fixed haircut rate. The haircut rate is currently set to 2% as of the publication date and is subject to change.

The total volatility charge is calculated as follows:

$$Non\ Corp/Non\ Muni\ Chrg = 0.02 \times \sum_{all\ Non-Corporate/Non-Municipal\ bonds} |v|$$

where v represents the market value for the corresponding non-corporate/non-municipal bond.

1.5 Family-Issued Securities Volatility Component Calculation

NSCC assesses a haircut-based volatility charge of no less than 80.0% on positions held in a Member's Family-Issued Securities (or "FIS", as defined in the NSCC Rules). The Family-issued Securities Charge is calculated to mitigate specific wrong-way risk to securities issued by Members or their affiliates.

NSCC removes all long Net Unsettled Positions in FIS from the VaR Charge calculation and assesses a haircut-based volatility charge on these positions based on the asset class of the security.

	Fixed Income Family-Issued Securities	Equity Family-Issued Securities
Long Positions	80.0% haircut	100.0% haircut
Short Positions	Not subject to this separate volatility charge.	Not subject to this separate volatility charge.

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2 Mark to Market Component

2.1.1 Start of Day Mark to Market Charge

The mark-to-market ("MTM") component measures the unrealized profit or loss using the contract price versus the current market price (that is, the price for a security determined daily for purposes of the CNS system; generally that is the prior day's closing price). The MTM component is described in Procedure XV, I(A)(1)(b) and (c) and I(A)(2)(b) of the NSCC Rules.

The MTM charge is assessed on each Member's rolling two-day portfolio net of unsettled positions, including positions that fail in NSCC's Continuous Net Settlement system. The charge is calculated by taking the difference between the contract value of each position in the portfolio and the market value based on the prior day's closing market price.

CUSIP MTM credits and debits are first aggregated at the linked family account level. The main account MTM is equal to the sum of the MTM debits across link accounts, separated into three transaction types: regular way, when-issued, and Institutional Delivery Net ("ID Net"). The MTM debits calculated for regular way, when-issued, and ID Net transactions are summed to a total MTM charge.

MTM credits do not offset the total MTM charge; in the event the Member has an MTM credit when aggregated at the main account level, the MTM charge will be zero.

2.1.2 Intraday Mark to Market Charge

NSCC may require an additional Intraday MTM charge should NSCC deem it necessary or appropriate, for example, during times of extreme market volatility. The intraday MTM charge is described in Procedure XV, Section I(B)(5) of the NSCC Rules.

Intraday market moves and positions are tracked in fifteen-minute intervals and an additional MTM charge may be collected if the difference between most recent mark-to-market price of a Member's Net Unsettled Positions and the most recent observed market price exceeds a predetermined threshold.

The current threshold is 80% of the Member's volatility charge and may be reduced if NSCC determines that a reduction of the threshold is appropriate to mitigate risk during volatile market conditions.

3 Special Charge

NSCC may require an additional payment, or Special Charge, from Members in view of price fluctuations in or volatility or lack of liquidity of any security. NSCC shall make such determination based on the Member, the security type and concentration, CRRM or third-party credit ratings, or other factors. The Special Charge is described in Procedure XV, Section I(A)(1)(d) and I(A)(2)(c) of the NSCC Rules.

4 CNS Fails Charge Component

NSCC may be exposed to market risk when a Member fails to pay net settlement proceeds as a result of the non-delivery of securities by settlement date as well as when a Member fails in the delivery of securities on settlement date. To mitigate NSCC's exposure to CNS fails positions,

which could be correlated to a Member's credit-worthiness, NSCC assesses the CNS Fails Charge. The CNS Fails Charge is described in Procedure XV, Section I(A)(1)(e) of the NSCC Rules.

The CNS Fails Charge is calculated by multiplying the current market value of a Member's aggregate CNS Fails Positions by a percent based on the Member's rating on the Credit Risk Rating Matrix ("CRRM"), as described below:

Member's CRRM Rating	CNS Fails Charge Haircut Rate
1-4	5.0% of the Member's aggregate CNS fails positions
5-6	10.0% of the Member's aggregate CNS fails positions
7	20.0% of the Member's aggregate CNS fails positions

The Credit Risk Rating Matrix is described in Rule 2B, Section 4 of the NSCC Rules.

5 Margin Requirement Differential ("MRD") Component

NSCC may be exposed to market risk based on potential portfolio fluctuation as a Member executes trades throughout the day. Pursuant to Addendum K of the NSCC Rules, NSCC's general counterparty trade guaranty generally attaches immediately upon trade validation and before NSCC has collected the Member's required deposit. As a result, NSCC may be exposed to large un-margined intraday portfolio fluctuations before NSCC has collected the Member's clearing fund requirement the following morning.

The Margin Requirement Differential charge ("MRD") is designed to help mitigate the risks posed to NSCC by day-over-day fluctuations in a Member's portfolio by forecasting future changes in a Member's portfolio based on a historical look-back at each Member's portfolio over a given time period. The MRD charge is described in Procedure XV, Section I(A)(1)(f) and 1(A)(2)(d) of the NSCC Rules.

The MRD charge is calculated based on the day-over-day positive changes in the Member's start of day[7] ("SOD") volatility charge and MTM charge components, which are calculated based on the overnight or end of day ("EOD") positions. For example, the position referred to by NSCC's system's SOD label on 7/1/2020 refers to the EOD position on 6/30/2020.

For any given calculation date, *t*, the MRD charge is calculated as follows:

1. Calculate the MRD_{VaR} and MRD_{MTM} sub-components,

7 Using the NSCC risk system convention.

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$$MRD_{VaR}(t) = \frac{\sum_{i=0}^{99} \theta^i \times \max\{VaR(t-i, SOD) - VaR(t-(i+1), SOD), 0\}}{\sum_{i=0}^{99} \theta^i}$$

$$MRD_{MTM}(t) = \frac{\sum_{i=0}^{99} \theta^i \times \max\{CHRG_{MTM}(t-i, SOD) - CHRG_{MTM}(t-(i+1), SOD), 0\}}{\sum_{i=0}^{99} \theta^i} \quad (1.2.3.1.1)$$

where

- i represents the number of business days look back relative to the calculation date, currently 100 days; For example, when $i = 0$, $VaR(t-i, SOD)$ represents the SOD Volatility charge as of the calculation date; when $i = 1$, $VaR(t-i, SOD)$ represents the SOD volatility charge one business day before the calculation date; etc;
- θ is equal to 0.97 as default;
- $VaR(d, SOD)$ is the SOD volatility charge as of business date d; and
- $CHRG_{MTM}(d, SOD)$ is the SOD MTM charge as of business date d.

2. Calculate the MRD charge by multiplying the sum of MRD_{VaR} and MRD_{MTM} sub-components with an MRD coefficient[8].

$$MRD(t) = Coefficient \times [\, MRD_{VaR}(t) + MRD_{MTM}(t) \,]$$

The MRD charge is calculated at the Member level. There are four special treatments in this calculation.

1. On the first day of membership, the differences $VaR(t-i, SOD) - VaR(t-(i+1), SOD)$ and $CHRG_{MTM}(t-i, SOD) - CHRG_{MTM}(t-(i+1), SOD)$ in Eqns. 1.2.3.1.1 are replaced with zeros.

2. Apart from treatment above, if a member has less than 101 business days of MTM and Volatility charges, the missing values $VaR(t)$ and $MTM(t)$ in Eqns. 1.2.3.1.1 are replaced with zeros.

6 Coverage Component ("CC") Charge

NSCC is exposed to a Member's un-margined portfolio as a result of the timing when NSCC's trade guaranty attaches to positions, which is immediately upon trade validation and prior to the collection of margin. Therefore, the Coverage Component ("CC") charge is designed to mitigate the risks associated with a Member's Required Fund Deposit being insufficient to cover projected liquidation losses to the coverage target, currently a 99 percent confidence level, by adjusting a

8 Current, as of the time of publication of this document, the MRD coefficient is 1.5; this is subject to change.

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Member's Required Fund Deposit towards the target. The CC charge is described in Procedure XV, Section I(A)(1)(g) and I(A)(2)(e).

The CC charge supplements the MRD charge by preemptively increasing a Member's Required Fund Deposit in an amount calculated to forecast potential deficiencies in the margin coverage of a Member's guaranteed portfolio.

The CC charge is calculated by comparing the simulated liquidation profit and loss of a Member's portfolio, using the actual positions and the actual historical returns on the positions, against the sum of each of the following Clearing Fund components: (i) volatility charge; (ii) MRD charge; and (iii) illiquid charge. For a given business day, NSCC determines a daily peak deficiency amount for each Member equal to the maximum observed deficiency over any of the prior 10 business days. The CC charge is equal to the front-weighted average of the peak deficiencies over the prior 100 business days.

The CC charge is calculated as follows:

1. For any given business day *t*, calculate the Peak Deficiency:

$$PeakDeficiency(t) = MAX_{0\le i\le 9}\{-\min[VaR(t-4-i,SOD) + Illiquid(t-4-i) + MRD(t-4-i) + P\&L(t-3-i),0]\}$$ Eqn. 1.2.3.2.1

where

- *i* represents the number of business days look back; For example, when *i*=0, $VaR(t-4-i,SOD)$ represents the SOD Volatility charge as of the business day of *t* - 4; when *i*=1, $VaR(t-4-i,SOD)$ represents the SOD Volatility charge as of the business day *t* – 5; and etc;
- $VaR(d,SOD)$ is the SOD Volatility charge as of the business day *d*;
- $Illiquid(d)$ is the illiquid charge as of the business day *d*;
- $MRD(d)$ is the MRD charge as of the business day d; and
- $P\&L(d)$ is the 3-day liquidation profit or loss of the SOD position as of the business day *d*;

2. Calculate the CC charge

$$CC(t) = \frac{\sum_{i=0}^{99}\theta^i \times \text{PeakDeficiency}(t-i)}{\sum_{i=0}^{99}\theta^i}$$

where

- *i* represents the number of business days look back as of the calculation day t, For example, when *i*=0, $PeakDeficiency(t-i)$ represents Peak Deficiency as of the calculation day t; when *i*=1, $PeakDeficiency(t-i)$ represents the Peak Deficiency as of the business day before the calculation day; and etc;
- θ is equal to 0.97 as default.

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The CC charge is calculated at the NSCC Member level only. The P&L and relevant charges in the above calculation are the sum of the Member's subaccounts. The following special treatment is applied:

1. When there is less than 10 days of history for the Peak Deficiency calculation in Eqn. 1.2.3.2.1, actual number of history observations is used.
2. In case the history of peak deficiencies is shorter than 100 days for any Member, all the missing peak deficiencies are default to zeros.

7 Illiquid Charge Component

An Illiquid Charge can be assessed on Members in view of price fluctuations in or volatility, or lack of liquidity of any security. The Illiquid Charge is described in Procedure XV, Section I(A)(1)(h) and I(A)(2)(f). The Illiquid Charge may be imposed based on:

- Size of the position in an Illiquid Security
- Average daily volume in the Illiquid Security in the position
- Price of the Illiquid Security in the position
- Member's rating on the CRRM
- Member's Excess Net Capital ("ENC")

Using the current CRRM rating Illiquid Charge criteria, which is set forth in Appendix E and is subject to change, the Illiquid Charge is equal to:

(1) for buy positions in sub-penny Illiquid Securities, the aggregate shares in such positions multiplied by $0.01, or

(2) for sell positions, the Illiquid Charge can be determined by the following:

(a) if the share quantity in the Illiquid Securities' position is less than 100 percent and greater than or equal to 25 percent of the average daily volume ("ADV"), the calculation shall use the lesser of the one month high price or the current market price of the Illiquid Securities (rounded up to the next $0.50, if applicable); and

(b) if the share quantity in the Illiquid Securities' position is greater than or equal to 100 percent of the ADV, the calculation shall use the greater of the one-month high price or the current market price of the Illiquid Securities (rounded up to the next $0.50, if applicable).

NSCC Members can email equityrisk@dtcc.com to obtain a flow chart detailing the applicable Illiquid Charge calculation based on their CRRM rating and capital levels as of the date of the request.

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8 Other Transactions Charge

An additional charge for transactions other than CNS transactions is based on the 20-day rolling average of the summed value of non-guaranteed settlement activities. This "Other Transactions" charge is described in Procedure XV, Section I(A)(3) of the NSCC Rules.

Daily Other Transactions charges range between 2.5% and 10.0% of the net debits and credits. Each of the current Non-CNS codes is described in Appendix D.

Currently, for Members with a CRRM rating of 1 through 6, the charge takes the greater of the following, based on a 20-day rolling average of activity:

- 2.5% of the absolute value of debits + the absolute value of credits
- 5.0% of the absolute value of debits

Currently, for Members with a CRRM rating of 7, the charge is calculated by taking the 20-day rolling average of activity based on 10.0% of the absolute value of debits and the absolute value of credits.

9 Mutual Fund Transactions Charge

An additional charge is calculated for mutual fund transactions, referred to as the Fund/Serv charge. This charge is described in Procedure XV, Section I(A)(4) of the NSCC Rules.

The Fund/Serv charge is derived from a Member's daily settlement debits related to mutual fund activities and is tiered as follows:

A. $5,000 if daily mutual fund services settlement debits of no more than $100,000 with respect to any one fund Member.

B. $10,000 if daily mutual fund services settlement debits of no more than $500,000 with respect to any one fund Member.

C. $20,000 if daily mutual fund services debits of more than $500,000 with respect to any one fund Member.

A daily monitoring 'snapshot' is performed at 12:00PM EST. When mutual fund settlement debits are greater than or equal to $500 million, NSCC generally will confirm the amount with the Member.

10 Excess Capital Premium ("CF Premium") Charge

NSCC may assess a CF Premium charge to mitigate risk presented by highly leveraged Members. The charge may be imposed when a Member's applicable Required Fund Deposit (the aggregate unadjusted Required Fund Deposit minus any Illiquid Charge, MRD charge, CC charge, and special charges) exceeds their excess net capital ("ENC") for broker-dealers, or equity capital for bank Members. The CF Premium charge is described in Procedure XV, Section I(B)(2).

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The CF Premium charge may be assessed based on the amount by which a Member's applicable Required Fund Deposit exceeds its most recently reported regulatory capital balance (ENC or equity capital).

If the ratio of the Required Fund Deposit over the excess capital balance (the "excess capital ratio") exceeds 1.0, a CF Premium charge may be calculated by multiplying the excess capital ratio by the amount by which the Required Fund Deposit exceeds the excess capital balance.

When the excess capital ratio exceeds 1.0, NSCC may calculate and assess the CF Premium charge as part of the Member's start-of-day requirement.

Excess Capital Ratio	NSCC Action	Additional Clearing Fund Calculation
Excess Capital Ratio ≥ 1.0	An excess capital premium may be imposed.	Multiply the amount of the CFR that is in excess of the reported capital balance by the Member's excess capital ratio

11 Backtesting Charge

NSCC may require a Member to make an additional deposit in the form of a Backtesting Charge to mitigate exposures that may not be adequately captured by the volatility model as needed to achieve a 99 percent back testing coverage target. The charge may be assessed at the start of the day or on an intraday basis, as needed. The Backtesting Charge is described in Procedure XV, Section I(B)(3) of the NSCC Rules.

NSCC incorporates daily backtesting to ensure that the calculated Clearing Fund Required Deposit is sufficient to cover the potential loss the clearing corporation may be subject to in the event of a Member default. In order to calculate this charge, NSCC takes end-of-day, 11:00AM EST, and 2:00PM EST portfolio snapshots, then compares the Member's Required Fund Deposit to the profit and loss over a simulated three-day liquidation horizon; a deficiency occurs when a Member's Required Fund Deposit does not sufficiently cover the simulated loss on a portfolio.

NSCC routinely calculates the rolling 12-month coverage ratio of the Member for both the end-of-day and intraday backtests. Coverage is calculated as the percentage of non-deficiency backtest observations out of the number of backtest observations the Member has during the period. NSCC seeks to maintain 99.0% coverage at the Member-level.

Should the coverage ratio decline below 99.0% for either or both backtest types, NSCC may assess a backtest charge component such that, if applied retroactively, the Member would not have incurred enough deficiencies for the coverage ratio to decline below the 99.0% coverage target. Typically, the amount of the backtest charge component will be equal to the Member's third-largest end-of-day backtest deficiency and fifth-largest intraday backtest deficiency during the rolling twelve-month period.

NSCC may adjust the calculation and/or application of the charge in order to achieve its backtesting coverage target.

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12 Bank Holiday Charge

NSCC does not collect margin or settle securities on a bank holiday, as Columbus Day and Veterans Day, when the equities markets are open for trading, but the Board of Governors of the Federal Reserve observes a holiday and banks are closed. To address exposure from Members' trading activity on a bank holiday, NSCC may require its Members to make an additional Clearing Fund deposit (the "Bank Holiday Charge"). The Bank Holiday Charge is based on NSCC's assessment of market conditions at the time the charge is calculated and is assessed on the business day immediately prior to the bank holiday. NSCC communicates in advance to Members, via an Important Notice, the day on which the charge will apply, including the methodology[9] it will use to calculate the Bank Holiday Charge. The Bank Holiday Charge is described in Procedure XV, Section I(B)(4) of the NSCC Rules.

13 Appendices

The information provided in these Appendices is current as of the publication date of this document. This information may change from time to time following publication, without notice and without updates to this document. Notwithstanding anything stated in this document, NSCC retains any discretion provided to it in the Rules in calculating the charges described therein.

Appendix A

Haircut Table

Asset Type	Factor	Haircut Rate
Non-NASDAQ, OTC BB or OTC Link	N/A	20.0% of the absolute value of the position
IPO	N/A	15.0% of the absolute value of the position
Non-Corporate/Non-Municipal Bonds	N/A	2.0% of the absolute value of the position

[9] A methodology might include time scaling of the volatility charge or a using a stress scenario that reflects potential market price volatility on that holiday.

Appendix B

Corporate Bond Mapping Table

Illiquid Security Group Code	Merrill Lynch Index	Description of the Security Group	Percentile (%)
1	C1A1	0-1 year/AAA/Aaa	99.5
2	C1A2	0-1 year/AA+/AA/AA-/Aa1/Aa2/Aa3	99.5
3	C1A3	0-1 year/A+/A/A-/A1/A2/A3	99.5
4	C1A4	0-1 year/BBB+/BBB/BBB-/Baa1/Baa2/Baa3	99.5
5	H0A0	0-1 year/BB & Lower	99.9
6	C1A1	1-3 years/AAA/Aaa	99.5
7	C1A2	1-3 years/AA+/AA/AA-/Aa1/Aa2/Aa3	99.5
8	C1A3	1-3 years/A+/A/A-/A1/A2/A3	99.5
9	C1A4	1-3 years/BBB+/BBB/BBB-/Baa1/Baa2/Baa3	99.5
10	H0A0	1-3 years/BB & Lower	99.9
11	C2A1	3-5 years/AAA/Aaa	99.5
12	C2A2	3-5 years/AA+/AA/AA-/Aa1/Aa2/Aa3	99.5
13	C2A3	3-5 years/A+/A/A-/A1/A2/A3	99.5
14	C2A4	3-5 years/BBB+/BBB/BBB-/Baa1/Baa2/Baa3	99.5
15	H0A0	3-5 years/BB & Lower	99.9
16	C3A1	5-7 years/AAA/Aaa	99.5
17	C3A2	5-7 years/AA+/AA/AA-/Aa1/Aa2/Aa3	99.5
18	C3A3	5-7 years/A+/A/A-/A1/A2/A3	99.5
19	C3A4	5-7 years/BBB+/BBB/BBB-/Baa1/Baa2/Baa3	99.5
20	H0A0	5-7 years/BB & Lower	99.9
21	C4A1	7-10 years/AAA/Aaa	99.5

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Illiquid Security Group Code	Merrill Lynch Index	Description of the Security Group	Percentile (%)
22	C4A2	7-10 years/AA+/AA/AA-/Aa1/Aa2/Aa3	99.5
23	C4A3	7-10 years/A+/A/A-/A1/A2/A3	99.5
24	C4A4	7-10 years/BBB+/BBB/BBB-/Baa1/Baa2/Baa3	99.5
25	H0A0	7-10 years/BB & Lower	99.9
26	C7A1	10-15 years/AAA/Aaa	99.5
27	C7A2	10-15 years/AA+/AA/AA-/Aa1/Aa2/Aa3	99.5
28	C7A3	10-15 years/A+/A/A-/A1/A2/A3	99.5
29	C7A4	10-15 years/BBB+/BBB/BBB-/Baa1/Baa2/Baa3	99.5
30	H0A0	10-15 years/BB & Lower	99.9
31	C8A1	15+ years/AAA/Aaa	99.5
32	C8A2	15+ years/AA+/AA/AA-/Aa1/Aa2/Aa3	99.5
33	C8A3	15+ years/A+/A/A-/A1/A2/A3	99.5
34	C8A4	15+ years/BBB+/BBB/BBB-/Baa1/Baa2/Baa3	99.5
35	H0A0	15+ years/BB & Lower	99.9
36	H0A0	All others/Not Rated	99.9

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Appendix C

Municipal Bond Haircut Table

Market	Asset Type	Factor	Haircut Rate
Municipal Bonds	Investment Grade	(Mnths to Mat) ≤ 36	Calibrated at 99.5% level based on tenor-based indices.
		37<(Mnths to Mat) ≤ 84	
		85<(Mnths to Mat) ≤ 144	
		145<(Mnths to Mat) ≤ 264	
		264<(Mnths to Mat)	
	Non-Investment Grade	(Mnths to Mat) ≤ 36	Calibrated at 99.9% level based on tenor and sector-based indices.
		37<(Mnths to Mat) ≤ 84	
		85<(Mnths to Mat) ≤ 144	
		145<(Mnths to Mat) ≤ 264	
		264<(Mnths to Mat)	
	Specific Issuer	All	During period of extraordinary market conditions, NSCC may apply the highest blended rate.

Appendix D

Non-CNS Codes

Code	Data Group	Description
1	DTC Settlement	DTC BROAD MONEY SETTLEMENT
2	Clearance Cash Adjustment	CLEARANCE CASH ADJUSTMENT
5	ACATS	ACATS INTERFACE REJECTS
8	ACATS	ACATS NEXT DAY SETTLEMENT

Code	Data Group	Description
11	Envelope	DIVIDEND SETTLMENT SERV.
12	Envelope	FUNDS ONLY SETTLEMENT
13	Envelope	DSS RECLAMATIONS
16	CNS Reorganizations	CNS REORG MARK - DEBIT
17	CNS Reorganizations	CNS REORG MARK - CREDIT
20	OW	RECAPS CASH ADJUSTMENTS
30	CDS Dividends	DTC CANADIAN DIVIDENDS
31	CDS Dividends	CNS CANADIAN DIVIDENDS
32	CDS Dividends	DSS CANADIAN DIVIDENDS
35	OTHER	OCC COLLATERAL PLEDGE
45	Fees	NASDAQ BX TRAN FEES
46	Fees	NASD REG-FEES
47	Fees	PSA REGULATORY FEES
48	Fees	NSE TRANSACTION FEES
49	Fees	CSE REGULATORY FEES
50	Fees	NYSE REGULATORY FEES
51	Fees	AMEX REGULATORY FEES
52	Fees	NASD REGULATORY FEES
53	Fees	PSE REGULATORY FEES
54	ETF	STANDARD BASKETS
55	ETF	CUSTOMIZED STANDARD BASKETS
68	Tax	NYS TRANSFER TAX
70	Tax	NYS QUARTERLY TAX
71	Tax	NYS QUARTERLY TAX REFUND

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Code	Data Group	Description
74	OTHER	CLEARING FUND COUPON INT
80	Fees	NSCC MONTHLY BILLING
81	Floor Broker	NYSE COMMISSION BILLS
83	Fully Paid	FULLY PAID DEBITS
84	Fully Paid	FULLY PAID CREDITS
85	Floor Broker	AMEX COMMISSION BILLS
91	OTHER	GCN CHARGES
96	OTHER	OPTIONAL SETTL SERVICE
97	OTHER	SUSPENSE
98	OTHER	PAYMENTS (FUNDS TRANSFER)
101	OTHER	RIO-DTC INTERFACE
111	Insurance	INSURANCE COMMISSIONS
112	Insurance	INSURANCE PREMIUMS
113	Insurance	LICENSING & APPT DETAIL
181	Floor Broker	NYSE COMM BILL CHARGES
185	Floor Broker	AMEX COMM BILL CHARGES
198	OTHER	DTC/CNS CREDITS

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Appendix E

Illiquid Charge Calculation Tables

Net Buy Illiquid Positions

CRRM Rating	% ADV	BUY QTY	ENC	DTC Inventory Offset	Pricing Calculation
1-4	N/A	X > 100MM	N/A	N/A	Per share times $0.01
5-7	N/A	X > 10MM	N/A	N/A	Per share times $0.01

Net Sell Illiquid Positions

CRRM Rating	% ADV	SELL QTY	ENC ($)	DTC Inventory Offset	Pricing Scheme (See Tables Below)
1-4	25 ≤ X < 100	X ≥ 1,000,000	N/A	Y	Lesser
1-4	100 ≤ X	X ≥ 1,000,000	N/A	Y	Greater
5-6	100 ≤ X	X ≥ 500,000	10MM < X	Y	Greater
5-6	100 ≤ X	X ≥ 100,000	10MM ≥ X	Y	Greater
5-6	25 ≤ X < 100	X ≥ 500,000	10MM < X	Y	Lesser
5-6	25 ≤ X < 100	X ≥ 100,000	10MM ≥ X	Y	Lesser
7	100 ≤ X	X ≥ 500,000	10MM < X	N	Greater
7	100 ≤ X	X ≥ 100,000	10MM ≥ X	N	Greater
7	25 ≤ X < 100	X ≥ 500,000	10MM < X	N	Lesser
7	25 ≤ X < 100	X ≥ 100,000	10MM ≥ X	N	Lesser

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Illiquid Pricing Scheme (Lesser)

Pricing Scheme ($)			Charge Calculation	Price Min ($)
Market Price	<	.01	Lesser of 1 month high price and Market price times 10	.01
Market Price	<	.05	Lesser of 1 month high price and market price times 10	.05
Market Price	<	.10	Lesser of 1 month high price and market price times 10	
Market Price	<	.20	Lesser of 1 month high price and market price times 5	
Market Price	<	1.00	Lesser of 1 month high price and market price times 2	
Market Price	>	1.00	Lesser of 1 month high price and $.50 price increment	

Illiquid Pricing Scheme (Greater)

Pricing Scheme ($)			Charge Calculation	Price Min ($)
Market Price	<	.01	Greater of 1 month high price and market price times 10	.01
Market Price	<	.05	Greater of 1 month high price and market price times 10	.05
Market Price	<	.10	Greater of 1 month high price and market price times 10	
Market Price	<	.20	Greater of 1 month high price and market price times 5	
Market Price	<	1.00	Greater of 1 month high price and market price times 2	
Market Price	>	1.00	Greater of 1 month high price and $.50 price increment	

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