DERIVATIVES AND SECURITIES FINANCING TRANSACTIONS CALCULATING CREDIT EXPOSURE

(1) **Derivative transactions**

(a) **Non-credit derivatives**. A bank shall calculate the credit exposure to a counterparty arising from a derivative transaction by one of the following methods.

(i) **Conversion Factor Matrix Method**. The credit exposure arising from a derivative transaction under the Conversion Factor Matrix Method shall equal and remain fixed at the potential future credit exposure of the derivative transaction which shall equal the product of the notional amount of the derivative transaction and a fixed multiplicative factor determined by reference to Table 1:

Table 1 – Conversion Factor Matrix for Calculating Potential Future Credit Exposure[1]

Original Maturity[2]	Interest Rate	Foreign Exchange Rate and Gold	Equity	Other[3] (includes commodities and precious metals except gold)
1 year or less	.015	.015	.20	.06
Over 1 to 3 years	.03	.03	.20	.18
Over 3 to 5 years	.06	.06	.20	.30
Over 5 to 10 years	.12	.12	.20	.60
Over 10 years	.30	.30	.20	1.0

[1] For an over-the-counter (OTC) derivative contract with multiple exchanges of principal, the conversion factor is multiplied by the number of remaining payments in the derivative contract.

[2] For an OTC derivative contract that is structured such that on specified dates any outstanding exposure is settled and the terms are reset so that the market value of the contract is zero, the remaining maturity equals the time until the next reset date. For an interest rate derivative contract with a remaining maturity of greater than one year that meets these criteria, the minimum conversion factor is 0.005.

[3] Transactions not explicitly covered by any other column in Table 1 are to be treated as "Other."

(ii) **Current Exposure Method**. The credit exposure arising from a derivative transaction (other than a credit derivative transaction) under the Current Exposure Method shall be calculated pursuant to 12 CFR Part 3, Appendix C, Section 32(c)(5), (c)(6) and (c)(7), dated January 1, 2012.
See supplemental information below.

(b) **Credit Derivatives**

(i) **Counterparty Exposure**. Notwithstanding (2)(a) below, a bank that uses the Conversion Factor Matrix Method or Current Exposure Method without entering into an effective margining arrangement as defined in ARM 2.59.125 must calculate the counterparty credit exposure arising from the credit derivatives entered by the

bank by adding the net notional value of all protection purchased from the counterparty on each reference entity.

(ii) **Reference Entity Exposure**. A bank must calculate the credit exposure to a reference entity arising from credit derivatives entered by the bank by adding the net notional value of all protection sold on the reference entity. However, the bank may reduce its exposure to a reference entity by the amount of any eligible credit derivative purchased on that reference entity from an eligible protection provider.

(c) **Special Rule for Central Counterparties**. In addition to amounts calculated under previous sections of this appendix, the measure of counterparty exposure to a central counterparty must include the sum of the initial margin posted by the bank plus any contributions made by it to a guaranty fund at the time such contribution is made.

(d) **Mandatory or Alternative Method**. The department may, in its discretion, require or permit a bank to use a specific method or methods set forth in this appendix to calculate the credit exposure arising from all derivative transactions or any specific derivative transaction or type or category of derivative transactions if it finds, in its discretion, that such method is consistent with the safety and soundness of the bank.

(2) **Securities Financing Transactions**

(a) In general, a bank must calculate the credit exposure arising from a securities financing transaction by one of the methods in this section appropriate to the transaction. Except as provided by (2)(d), a bank must use the same method for calculating credit exposure arising from all of its securities financing transactions.

(b) **Basic Method**. A bank may calculate the credit exposure of a securities financing transaction as follows:

(i) **Repurchase Agreement**. The credit exposure arising from a repurchase agreement shall equal and remain fixed at the market value at execution of the transaction of the securities transferred to the other party less cash received.

(ii) **Securities Lending Transaction**

(A) **Cash Collateral Transactions**. The credit exposure arising from a securities lending transaction where the collateral is cash shall equal and remain fixed at the market value at execution of the transaction of securities transferred less cash received.

(B) **Non-cash Collateral Transactions**. The credit exposure arising from a securities lending transaction where the collateral is other securities shall equal and remain fixed as the product of the higher of the two haircuts associated with the two securities, as determined in Table 2 below, and the higher of the two par values of the securities. Where more than one security is provided as collateral, the applicable haircut is the higher of the haircut associated with the security lent and the notional-weighted average of the haircuts associated with the securities provided as collateral.

(iii) **Reverse Repurchase Agreement**. The credit exposure arising from a reverse repurchase agreement shall equal and remain fixed as the product of the haircut associated with the collateral received, as determined in Table 2 below, and the amount of cash transferred.

(iv) **Securities Borrowing Transaction**

(A) **Cash Collateral Transactions**. The credit exposure arising from a securities borrowed transaction where the collateral is cash shall equal and remain fixed as the product of the haircut on the collateral received, as determined in Table 2 below, and the amount of cash transferred to the other party.

(B) **Non-cash Collateral Transactions**. The credit exposure arising from a securities borrowed transaction where the collateral is other securities shall equal and remain fixed as the product of the higher of the two haircuts associated with the two securities, as determined in Table 2 below, and the higher of the two par values of the securities. Where more than one security is provided as collateral, the applicable haircut is the higher of the haircut associated with the security lent and the notional-weighted average of the haircuts associated with the securities provided as collateral.

Table 2 – Collateral Haircuts

Sovereign Entities

	Residual Maturity	Haircut without currency mismatch[1]
OECD Country Risk Classification[2] 0-1	≤ 1 year	0.005
	> 1 year, ≤ 5 years	0.02
	> 5 years	0.04
OECD Country Risk Classification 2-3	≤ 1 year	0.01
	>1 year , ≤ 5 years	0.03
	> 5 years	0.06

Corporate and Eligible Bonds that are Bank-Eligible Investments

	Residual Maturity	Haircut without currency mismatch[1]
All	≤ 1 year	0.02
All	> 1 year, ≤ 5 years	0.06
All	> 5 years	0.12

[1] In cases where the currency denomination of the collateral differs from the currency denomination of the credit transaction, an additional 8 percent haircut will apply.

[2] Organization for Economic Co-operation and Development (OECD) Country Risk Classification means the country risk classification as defined in Article 25 of the OECD's July 2014 Arrangement on Officially Supported Export Credits.

Other Eligible Collateral

Main index[3] equities (including convertible bonds)	0.15
Other publicly traded equities (including convertible bonds)	0.25
Mutual funds	Highest haircut applicable to any security in which the fund can invest
Cash collateral held	0

[3] Main index means the Standard & Poor's 500 Index, the FTSE All-World Index, and any other index for which the covered company can demonstrate to the satisfaction of the Federal Reserve that the equities represented in the index have comparable liquidity, depth of market, and size of bid-ask spreads as equities in the Standard & Poor's 500 Index and FTSE All-World Index.

(c) **Basel Collateral Haircut Method**. A bank may calculate the credit exposure of a securities financing transaction pursuant to 12 CFR Part 3, Appendix C, Sections 32(b)(2)(i) and (b)(2)(ii), dated January 1, 2012.

See supplemental information below.

(d) **Mandatory or Alternative Method**. The department may, in its discretion, require or permit a bank to use a specific method or methods to calculate the credit exposure arising from all securities financing transactions or any specific, or category of, securities financing transactions if it finds that such method is consistent with the safety and soundness of the bank.

(3) **Government Securities – Fiduciary or Custodial Capacity**. A bank that holds government securities in a fiduciary capacity or in a custodial capacity for customers, in conjunction with a repurchase agreement, must comply with 12 CFR Part 344 including but not limited to possession, record keeping, confirmations, and maintaining written policies and procedures in accordance with 17 CFR 450.3.

12 CFR Part 3, Appendix C, Section 32(c)(5), (c)(6), and (c)(7) dated January 1, 2012, is included below for ease of reference. Section 32(c)(7) contains a reference to Section 32(b)(2)(i) which is also included below for ease of reference.

If any conflict exists between the supplemental information that follows and the Office of the Comptroller of the Currency (OCC) guidance at 12 CFR Part 3, Appendix C, Section 32(c)(5), (c)(6), and (c)(7) dated January 1, 2012, the latter shall control except to the extent the OCC guidance allows use of the Model Method (formerly referred to as Internal Model) under 12 CFR Part 3, Appendix C, Section 32(c)(7) and/or 32(b)(i). The Model Method may not be used by banks organized under the laws of this state in calculating credit exposures arising from derivative or securities financing transactions.

12 CFR Part 3, Appendix C, Section 32. Counterparty Credit Risk of Repo-Style Transactions, Eligible Margin Loans, and OTC Derivative Contracts

(c) EAD for OTC derivative contracts.

(5) *Single OTC derivative contract.* Except as modified by paragraph (c)(7) of this section, the EAD for a single OTC derivative contract that is not subject to a qualifying master netting agreement is equal to the sum of the bank's current credit exposure and potential future credit exposure (PFE) on the derivative contract.

(i) *Current credit exposure.* The current credit exposure for a single OTC derivative contract is the greater of the mark-to-market value of the derivative contract or zero.

(ii) *PFE.* The PFE for a single OTC derivative contract, including an OTC derivative contract with a negative mark-to-market value, is calculated by multiplying the notional principal amount of the derivative contract by the appropriate conversion factor in Table 4. For purposes of calculating either the PFE under this paragraph or the gross PFE under paragraph (c)(6) of this section for exchange rate contracts and other similar contracts in which the notional principal amount is equivalent to the cash flows, notional principal amount is the net receipts to each party falling due on each value date in each currency. For any OTC derivative contract that does not fall within one of the specified categories in Table 4, the PFE must be calculated using the "other" conversion factors. A bank must use an OTC derivative contract's effective notional principal amount (that is, its apparent or stated notional principal amount multiplied by any multiplier in the OTC derivative contract) rather than its apparent or stated notional principal amount in calculating PFE. PFE of the protection provider of a credit derivative is capped at the net present value of the amount of unpaid premiums.

Table 4 – Conversion Factor Matrix for OTC Derivative Contracts[1]

Remaining maturity[2]	Interest rate	Foreign exchange rate and gold	Credit (investment-grade reference obligor)[3]	Credit (non-investment-grade reference obligor)	Equity	Precious metals (except gold)	Other
One year or less	0.00	0.01	0.05	0.10	0.06	0.07	0.10
Over one to five years	0.005	0.05	0.05	0.10	0.08	0.07	0.12
Over five years	0.015	0.075	0.05	0.10	0.10	0.08	0.15

[1] For an OTC derivative contract with multiple exchanges of principal, the conversion factor is multiplied by the number of remaining payments in the derivative contract.

[2] For an OTC derivative contract that is structured such that on specified dates any outstanding exposure is settled and the terms are reset so that the market value of the contract is zero, the remaining maturity equals the time until the next reset date. For an interest rate derivative contract with a remaining maturity of greater than one year that meets these criteria, the minimum conversion factor is 0.005.

[3] A bank must use the column labeled "Credit (investment-grade reference obligor)" for a credit derivative whose reference obligor has an outstanding unsecured long-term debt security without credit enhancement that has a long-term applicable external rating of at least investment grade. A bank must use the column labeled "Credit (non-investment-grade reference obligor)" for all other credit derivatives.

(6) *Multiple OTC derivative contracts subject to a qualifying master netting agreement.* Except as modified by paragraph (c)(7) of this section, the EAD for multiple OTC derivative contracts subject to a qualifying master netting agreement is equal to the sum of the net current credit exposure and the adjusted sum of the PFE exposure for all OTC derivative contracts subject to the qualifying master netting agreement.

(i) *Net current credit exposure.* The net current credit exposure is the greater of:

(A) The net sum of all positive and negative mark-to-market values of the individual OTC derivative contracts subject to the qualifying master netting agreement; or

(B) zero.

(ii) *Adjusted sum of the PFE.* The adjusted sum of the PFE, Anet, is calculated as Anet = (0.4×Agross)+(0.6×NGR×Agross), where:

(A) Agross = the gross PFE (that is, the sum of the PFE amounts (as determined under paragraph (c)(5)(ii) of this section) for each individual OTC derivative contract subject to the qualifying master netting agreement); and

(B) NGR = the net to gross ratio (that is, the ratio of the net current credit exposure to the gross current credit exposure). In calculating the NGR, the gross current credit exposure equals the sum of the positive current credit exposures (as determined under paragraph (c)(5)(i) of this section) of all individual OTC derivative contracts subject to the qualifying master netting agreement.

(7) *Collateralized OTC derivative contracts.* A bank may recognize the credit risk mitigation benefits of financial collateral that secures an OTC derivative contract or single product netting set of OTC derivatives by factoring the collateral into its LGD [loss given default] estimates for the contract or netting set. Alternatively, a bank may recognize the credit risk mitigation benefits of financial collateral that secures such a contract or netting set that is marked to market on a daily basis and subject to a daily margin maintenance requirement by estimating an unsecured LGD for the contract or netting set and adjusting the EAD calculated under paragraph (c)(5) or (c)(6) of this section using the collateral haircut approach in paragraph (b)(2) of this section. The bank must substitute the EAD calculated under paragraph (c)(5) or (c)(6) of this section for $\sum E$ in the equation in paragraph (b)(2)(i) of this section and must use a ten-business-day minimum holding period (TM = 10).

12 CFR Part 3, Appendix C, Section 32(b)(2)(i) and (ii) dated January 1, 2012, is included below for ease of reference.

If any conflict exists between the supplemental information that follows and the OCC guidance at 12 CFR Part 3, Appendix C, Section 32(c)(5), (c)(6), and (c)(7) and/or 32(b)(i) and (b)(ii) dated January 1, 2012, the latter shall control except to the extent the OCC guidance allows use of the Model Method (formerly referred to as Internal Model). The Model Method may not be used by banks organized under the laws of this state in calculating credit exposures arising from derivatives or securities financing transactions.

    (b) *EAD for eligible margin loans and repo-style transactions*

    (2) *Collateral haircut approach*

(i) *EAD equation.* A bank may determine EAD for an eligible margin loan, repo-style transaction, or netting set by setting EAD equal to $\max\{0, [(\sum E - \sum C) + \sum(E_s \times H_s) + \sum(E_{fx} \times H_{fx})]\}$, where:

(A) $\sum E$ equals the value of the exposure (the sum of the current market values of all instruments, gold, and cash the bank has lent, sold subject to repurchase, or posted as collateral to the counterparty under the transaction (or netting set));

(B) $\sum C$ equals the value of the collateral (the sum of the current market values of all instruments, gold, and cash the bank has borrowed, purchased subject to resale, or taken as collateral from the counterparty under the transaction (or netting set));

(C) E_s equals the absolute value of the net position in a given instrument or in gold (where the net position in a given instrument or in gold equals the sum of the current market values of the instrument or gold the bank has lent, sold subject to repurchase, or posted as collateral to the counterparty minus the sum of the current market values of that same instrument or gold the bank has borrowed, purchased subject to resale, or taken as collateral from the counterparty);

(D) H_s equals the market price volatility haircut appropriate to the instrument or gold referenced in E_s;

(E) E_{fx} equals the absolute value of the net position of instruments and cash in a currency that is different from the settlement currency (where the net position in a given currency equals the sum of the current market values of any instruments or cash in the currency the bank has lent, sold subject to repurchase, or posted as collateral to the counterparty minus the sum of the current market values of any instruments or cash in the currency the bank has borrowed, purchased subject to resale, or taken as collateral from the counterparty); and

(F) Hfx equals the haircut appropriate to the mismatch between the currency referenced in Efx and the settlement currency.

(ii) *Standard supervisory haircuts.*

(A) Under the standard supervisory haircuts approach:

(1) A bank must use the haircuts for market price volatility (Hs) in Table 3, as adjusted in certain circumstances as provided in paragraph (b)(2)(ii)(A)(3) and (4) of this section;

(2) For currency mismatches, a bank must use a haircut for foreign exchange rate volatility (Hfx) of 8 percent, as adjusted in certain circumstances as provided in (b)(2)(ii)(A)(3) and (4) of this section.

(3) For repo-style transactions, a bank may multiply the supervisory haircuts provided in paragraphs (b)(2)(ii)(A)(1) and (2) of this section by the square root of ½ (which equals 0.707107).

(4) A bank must adjust the supervisory haircuts upward on the basis of a holding period longer than ten business days for eligible margin loans or five business days (for repo-style transactions) where and as appropriate to take into account the illiquidity of an instrument.

Table 3 – Standard Supervisory Market Price Volatility Haircuts[1]

Applicable external rating grade category for debt securities	Residual maturity for debt securities	Issuers exempt from the 3 basis point floor	Other issuers
Two highest investment-grade rating categories for long-term ratings/ highest investment-grade rating category for short-term ratings	≤ 1 year>1 year, ≤ 5 years > 5 years	0.0050.02 0.04	0.010.04 0.08
Two lowest investment-grade rating categories for both short- and long-term ratings	≤ 1 year> 1 year, ≤ 5 years > 5 years	0.010.03 0.06	0.020.06 0.12
One rating category below investment grade	All	0.15	0.25
Main index equities (including convertible bonds) and gold	0.15		
Other publicly traded equities (including convertible bonds), conforming residential mortgages, and nonfinancial collateral	0.25		
Mutual funds	Highest haircut applicable to any security in which the fund can invest.		
Cash on deposit with the bank (including a certificate of deposit issued by the bank)	0		

[1] The market price volatility haircuts in Table 3 are based on a ten-business-day holding period.