

CME IBOR Conversion for CHF, JPY and GBP Cleared Swaps

August 2021

Acknowledgement

Please note that this conversion plan is limited to CHF, JPY and GBP LIBOR settings which will cease / cease to be representative immediately after end-December 2021.

However, CME intends to employ the **same conversion approach**, in due course, to relevant USD LIBOR settings which will cease / cease to be representative immediately after end-June 2023.

Agenda

1 Introduction to Conversion Plan

.....

2 ISDA Fallback Pricing Protocol

.....

3 IBOR Conversion Scenarios and RFR Replacement(s)

.....

4 Operational Processing

Fallback Approach for CME Cleared Swaps

ICE LIBOR Phase-out

On March 5, 2021, at the same time as the announcement by ICE Benchmark Administration Limited (“IBA”), the authorized administrator of LIBOR, of its intention to cease the publication of certain LIBOR settings, the UK FCA announced that the following LIBOR settings will either cease to be provided by IBA or will no longer be representative of the underlying market on the following dates:

- EUR, CHF, JPY and GBP LIBOR for all tenors immediately after December 31, 2021;
- All major USD LIBOR tenors (e.g., overnight, one month, three month, six month and twelve month) immediately after June 30, 2023

ISDA Fallbacks

ISDA confirmed that the FCA announcement constitutes an “Index Cessation Event” for the purposes of ISDA’s IBOR Fallback Supplement and Protocol:

- affected OTC IRS will fall back to the relevant credit and spread adjusted RFR on the relevant ISDA “Index Cessation Effective Date” above
- ISDA’s approach would compound realized RFR daily and add a credit spread in implementing fallback to relevant RFRs. It is available only at the end of the interest period

CME Plan

CME incorporated ISDA IBOR fallbacks in January 2021. However, based on recent market feedback, CME now plans to convert existing IBOR swap exposures into market standard Risk-Free Rate (RFR) swaps, with a cash adjustment to compensate for any changes in valuation, prior to an Index Cessation Effective Date. **This conversion process benefits the marketplace by:**

- ✓ Creation of a single transparent liquidity pool for trading RFR swaps
- ✓ Providing participants certainty that “legacy” and “new” contracts would be fungible with one another upon transition to the RFR fallback
- ✓ Market standard OIS are widely supported by participants and market infrastructure. This approach removes the need to operationally support “Observation Period Shift” defined in ISDA IBOR Fallbacks

Conversion Plan for certain CME Cleared Swaps – Introduction

Summary

Scope: IBOR Swaps denominated in CHF, JPY and GBP currencies only*

Initial Conversion Dates:

CHF and JPY: Close of business on December 3, 2021

GBP: Close of business on December 17, 2021

Conversion Process: CME plans to convert all in-scope cleared IBOR interest rate products to RFR OIS on a single date where:

- ✓ Each IBOR swap is terminated and replaced with a corresponding RFR OIS (replacement swap);
Resultant swap(s) will differ slightly by economic terms. The following sections will provide further details.
- ✓ Key economics are copied over to the replacement swap;
- ✓ ISDA fallback Spread adjustment is applied to the floating leg of the replacement swap;
- ✓ A cash compensation is applied as an upfront fee to the replacement swap
- ✓ CME will maintain the known ICE LIBOR coupons through the conversion process, adding known coupons as upfront fees to the replacement swap(s)

*Note that the conversion scope is limited to CHF, JPY and GBP settings which will cease / cease to be representative immediately after end-December 2021. Relevant USD LIBOR settings will continue to be provided until end-June 2023 and EURIBOR is not currently subject to an Index Cessation Event under the ISDA Supplement and Protocol.

Conversion Plan for certain CME Cleared Swaps – Introduction

Conversion Process Considerations

Address ICE LIBOR fixings that occur between Conversion Date and Index Cessation Effective Date:

CME will convert a subset of IBOR trades, that reference fixing between Conversion Date and Index Cessation Effective Date, on January 3, 2022 (CHF) and January 4, 2022 (GBP, JPY). Considerations made for this approach:

- ✓ Respect the ICE LIBOR fixing between conversion date and Index Cessation Effective Date;
- ✓ Buy-side clients are sensitive to accepting basis swaps;
- ✓ Accounts for the compounded fixings for Compounding and Zero-Coupon swaps;
- ✓ Maintains Gross notional

Basis Swaps and FRAs:

- ✓ Basis Swaps will be converted (split) into two vanilla fixed-float swaps prior to conversion date
- ✓ CME will cease clearing GBP, JPY and CHF FRAs prior to the conversion
- ✓ CME is targeting conversion of basis instruments on **Friday, September 24th**

Support post conversion processing of bilateral Swaption expiries:

CME will accept IBOR swaps for clearing post December 2021 conversion cycles

- ✓ These daily end-of-day conversion cycles will mirror the December 2021 conversion processing

Conversion Plan for certain CME Cleared Swaps – Introduction

Process for Determining Cash Compensation

$$\text{Cash Compensation} = \text{Adj NPV}^* \text{ of IBOR Swap} - \text{Adj NPV of Converted RFR Swap(s)}$$

Pricing IBOR Swaps on Conversion Date

Considerations: Ensure pricing of the IBOR swaps is fair and is not subject to manipulation to IBOR marks

Plan: Price the IBOR swaps using ISDA Fallback Pricing Protocol (Supplement 70)

Convert IBOR Swaps to corresponding RFR Swaps

Considerations: Reduce the differences in cashflow amounts for the projected cashflows

Ensure the converted swap is maintaining the IBOR coupons that are known but not paid

Plan: Account for the ISDA Fallback Spread on the RFR Leg to ensure minimal difference in future cashflows

Based on the swap effective date, add fees to account for known ICE LIBOR fixings that are known but not settled. Account for compounding of known ICE LIBOR fixings for zero coupon swaps.

Pricing RFR Swaps on Conversion Date

Price the converted RFR swap on conversion date consistent with current ISDA Pricing Protocol

** Adjusted NPV = NPV of Swap – Present Value of any fee due to bank the following business day*

Agenda

1 Introduction to Conversion Plan

.....

2 ISDA Fallback Pricing Protocol

.....

3 IBOR Conversion Scenarios and RFR Replacement(s)

.....

4 Operational Processing

Fallback Pricing Approach for CME Cleared Swaps

ISDA Fallback Pricing Protocol: *Computing all in Fallback IBOR Rate*

This mechanism will be used for computing the projected IBOR Forward Rate on conversion date

The Fallback reference rate FF , with respect to an IBOR tenor f and Record/Fixing Date t is computed as:

$$FF_{f,t} = ARR_{f,t} + SA_{f,t}$$

where $ARR_{f,t}$ is the Adjusted Risk-Free Rate, $SA_{f,t}$ is the Fallback spread fixed by Bloomberg for IBOR tenor

$$ARR_{f,t} = \frac{DayCount_I}{DayCount_{RR}} \times \frac{1}{\delta_{S_{f,t}, E_{f,t}}} \times \left[\left(\prod_{u \in AP_{f,t}} (1 + RFR_u \times \delta_{u,u+1}) \right) - 1 \right]$$

where:

$DayCount_I$ is day-count convention for IBOR index

$DayCount_{RR}$ is day-count convention for Reference Rate index

$S_{f,t}$ is the accrual start date for IBOR tenor

$E_{f,t}$ is the accrual end date for IBOR tenor

$\delta_{A,B}$ is the day count fraction for the Reference Rate

$AP_{f,t}$ is the Accrue Period for RFR compounding;

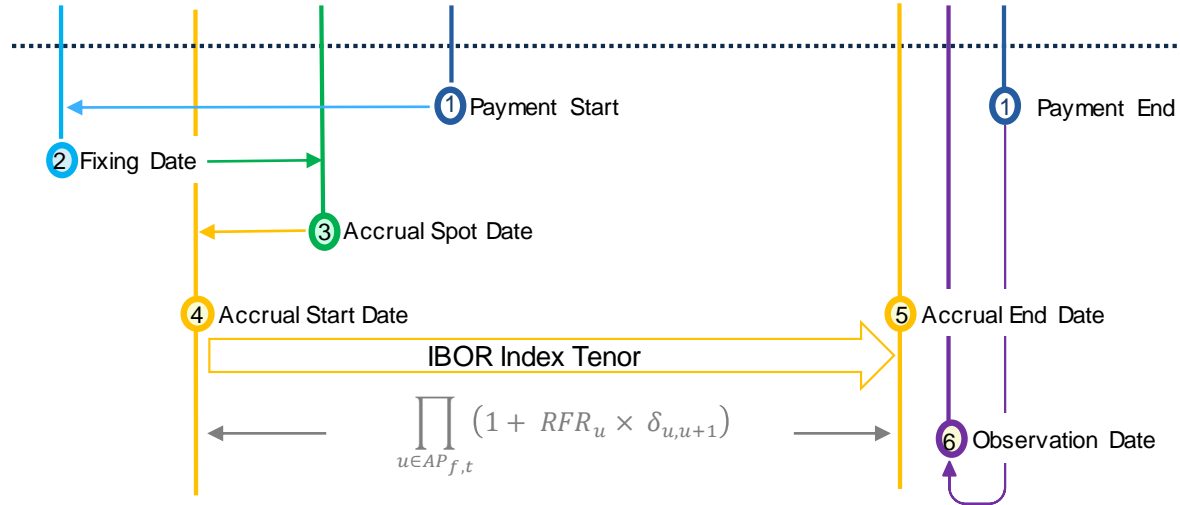
u is the business day within Accrue Period defined by RFR holiday calendar

RFR_u is the daily risk-free rate

Details of the Fallback Rate adjustment is highlighted at <https://data.bloomberglp.com/professional/sites/10/IBOR-Fallback-Rate-Adjustments-Rule-Book.pdf>

Fallback Pricing Approach for CME Cleared Swaps

ISDA Fallback Pricing Protocol: *Determining Accrual period for RFR compounding*



Details of the Fallback Rate adjustment is highlighted at <https://data.bloomberglp.com/professional/sites/10/IBOR-Fallback-Rate-Adjustments-Rule-Book.pdf>

- 1 Compute the Payment Start Date and Payment End Date based on trade attributes
- 2 Compute IBOR Fixing date from Payment Start Date using fixing offset, calendar and business convention from trade attributes
- 3 Compute Accrual Spot Date as Spot Lag number of business days from Fixing Date using RFR calendar and Following convention
- 4 Compute Accrual Start Date as 2 business days before Accrual Spot Date on RFR calendar using Preceding convention
- 5 Compute Accrual End Date by adding IBOR Index tenor from Accrual Start Date
- 6 Compute Observation Date as 2 business days before Payment Date on trade payment calendar using Preceding convention. Ensure the Accrual End date is on or before Observation Date. If not, then adjust the Fixing Date backward until the condition is satisfied

Agenda

1 Introduction to Conversion Plan

2 ISDA Fallback Pricing Protocol

3 IBOR Conversion Scenarios and RFR Replacement(s)

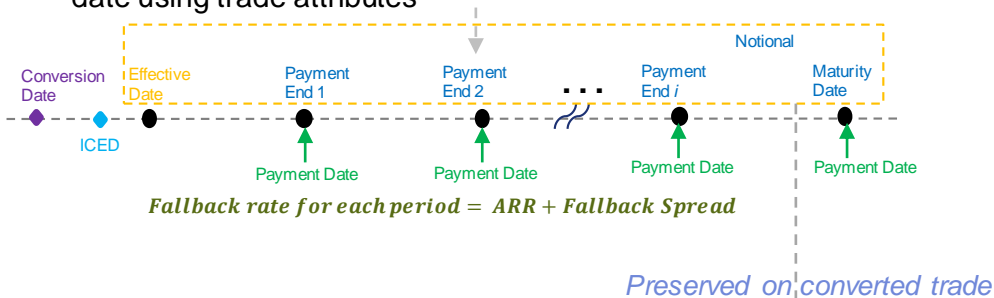
4 Operational Processing

Methodology for Converting IBOR Swaps to RFR Swaps

Conversion of Vanilla Forward Starting Swap: Effective Date of the Swap is post Index Cessation Effective Date (ICED)

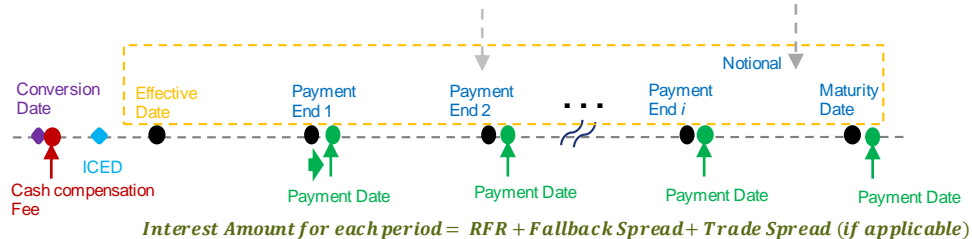
Pricing and Termination of IBOR Swap

Compute payment period start/end date, payment date and fixing date using trade attributes



Converted Trade Attributes

Compute payment period start/end date using trade attributes same as IBOR Trade



Conversion Methodology

- ✓ Apply ISDA Fallback pricing to each of the fixing dates (refer to slide 8 and 9). Imply compounded ARR from the bootstrapped RFR curve.
- ✓ Price the IBOR leg as priced currently using the Fallback rate implied for each reset
- ✓ Effective date, maturity date, notional, payment frequency, and direction are preserved from IBOR swap
- ✓ **Override the Payment Offset to standard RFR convention on both fixed and floating legs**
- ✓ Override the below attributes to market standard RFR convention for IBOR leg:
 - Index Name and Tenor
 - Fixing Offset and Calendar
 - Payment Offset
 - ISDA fixed spread adj. added to compounded RFR leg as simple interest amount
- ✓ Upfront fee is added to RFR OIS to move the cash compensation.

Methodology for Converting IBOR Swaps to RFR Swaps

Ex. 1) **Forward-starting** LIBOR swap converted to RFR OIS (JPY example)

JPY 6M LIBOR IRS	
Currency	JPY
Notional	50,000,000
Trade Date	6/13/2021
Effective Date	6/15/2022
Maturity Date	6/15/2023
Fixed Direction	Payer
Fixed Rate	1.055%
Fixed Leg Payment Freq.	6M
Fixed Leg Payment Offset	n/a
Floating Rate Index	JPY-LIBOR-BBA
Float Leg Index Tenor	6M
Float Leg Payment Freq.	6M
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	n/a
Float Leg Compounding Method	None
Reset Relative To	Begin Period
Float Leg Fixing Adj Calendar	GBLO
Date Roll	15
Status	Terminated



JPY TONA OIS Replacement	
Currency	JPY
Notional	50,000,000
Trade Date	6/13/2021
Effective Date	6/15/2022
Maturity Date	6/15/2023
Fixed Direction	Payer
Fixed Rate	1.055%
Fixed Leg Payment Freq.	6M
Fixed Leg Payment Offset	2 Days
Floating Rate Index	JPY-TONA-OIS Compound
Float Leg Index Tenor	1D
Float Leg Payment Freq.	6M
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	2 Days
Reset Relative To	End of Period
Float Leg Fixing Adj Calendar	JPTO
Status	Cleared
Date Roll	15
Upfront Fee	Cash compensation
Upfront Fee Payment Date	12/7/2021 (Conversion Dt + 2)
Float Leg Spread	Fixed spread adjustment (0.05809%)

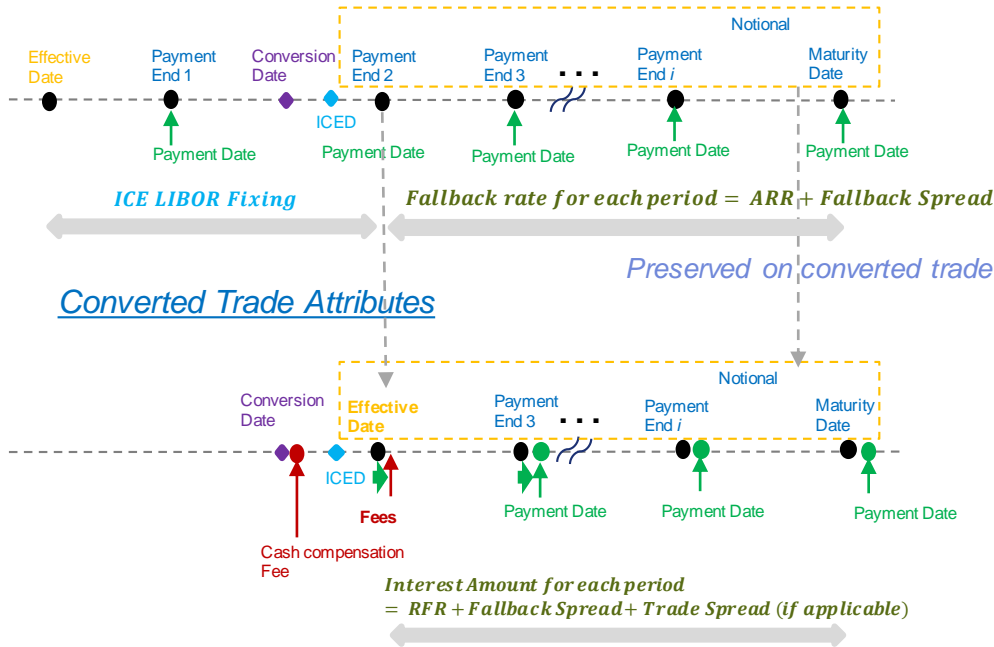
- = Economic preserved
- = Economic changed/added

Methodology for Converting IBOR Swaps to RFR Swaps

Conversion of Vanilla Seasoned Swap: Effective Date of the Swap is prior to Index Cessation Effective Date (ICED)

Pricing and Termination of IBOR Swap

Pricing and other calculation same as previous slide



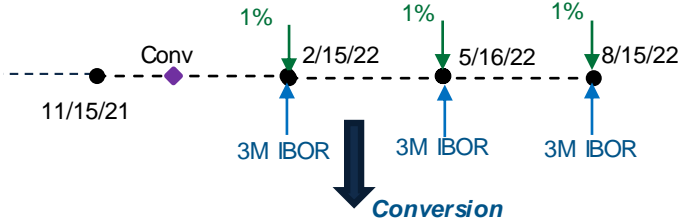
Conversion Methodology

- ✓ Book a forward starting RFR swap with Effective date set as the next payment period start date of floating leg immediately following ICED
- ✓ Any known IBOR payments or fixed coupon payments accrued but not paid are settled as fees as per the new coupon dates
 - If the fixed and float coupon dates match, then a single fee is added to the RFR swap with the net coupon amount
 - If the fixed and float coupon dates do not match, then:
 - The fraction of the fixed coupon accrued but not paid is included as a fee on the RFR swap
 - Known but unpaid float coupon is added as a fee on a new 1-unit notional RFR swap with a maturity date and fee payment date matching the current IBOR coupon payment date plus any applicable payment offset.
 - A short initial stub may be needed on Fixed Leg

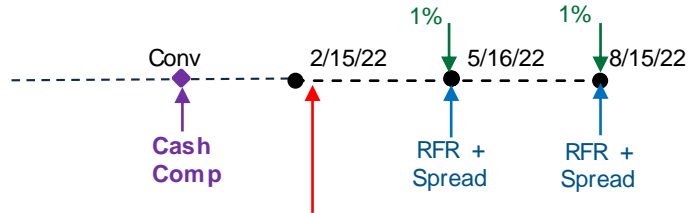
Methodology for Converting IBOR Swaps to RFR Swaps

Example of Vanilla Seasoned swap: Forward Fees Computation examples

3M IBOR vs 1% fixed IRS
 Start= 8/15/21; Maturity = 8/15/22
 Fixed Pays 3m, Float Receives 3m



RFR vs 1% fixed IRS
 Start= 2/15/22; Maturity = 8/15/22
 Fixed Pays 3m, Float Receives 3m

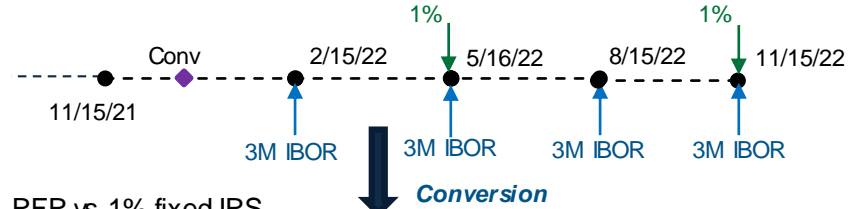


$$\text{Fees} = \text{IBOR Leg Accrual} - \text{Fixed Leg Accrual}$$

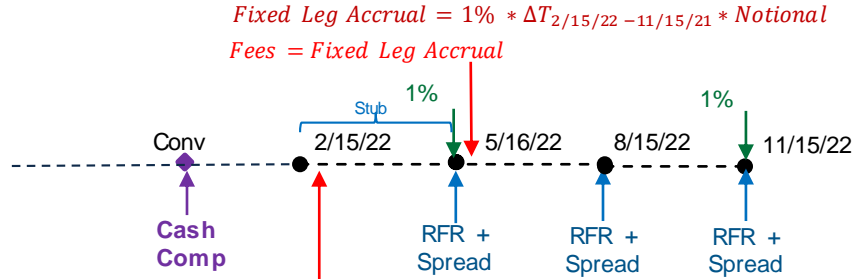
$$\text{IBOR Leg Accrual} = 3M \text{ IBOR}_{11/15/2021} * \Delta T_{2/15/22 - 11/15/21} * \text{Notional}$$

$$\text{Fixed Leg Accrual} = 1\% * \Delta T_{2/15/22 - 11/15/21} * \text{Notional}$$

3M IBOR vs 1% fixed IRS
 Start= 11/15/21; Maturity = 11/15/22
 Fixed Pays 6m, Float Receives 3m



RFR vs 1% fixed IRS
 Start= 2/15/22; Maturity = 11/15/22
 Stub added to Fixed Leg with Regular Start Date set as 5/16/22
 Fixed Pays 6m, Float Receives 3m



$$\text{Fixed Leg Accrual} = 1\% * \Delta T_{2/15/22 - 11/15/21} * \text{Notional}$$

$$\text{Fees} = \text{Fixed Leg Accrual}$$

$$\text{Fees} = \text{IBOR Leg Accrual}$$

$$\text{IBOR Leg Accrual} = 3M \text{ IBOR}_{11/15/2021} * \Delta T_{2/15/22 - 11/15/21} * \text{Notional}$$

Methodology for Converting IBOR Swaps to RFR Swaps

Ex. 2) **Seasoned** LIBOR swap with **matching** fixed + floating coupon dates converted to RFR OIS (JPY example)

JPY 3M LIBOR IRS	
Currency	JPY
Notional	50,000,000
Trade Date	11/11/2021
Effective Date	11/15/2021
Maturity Date	8/15/2022
Fixed Direction	Payer
Fixed Rate	1.055%
Fixed Leg Payment Freq.	3M
Fixed Leg Payment Offset	n/a
Floating Rate Index	JPY-LIBOR-BBA
Float Leg Index Tenor	3M
Float Leg Payment Freq.	3M
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	n/a
Float Leg Compounding Method	None
Reset Relative To	Begin Period
Float Leg Fixing Adj Calendar	GBLO
Date Roll	15
Status	Terminated



JPY TONA OIS Replacement	
Currency	JPY
Notional	50,000,000
Trade Date	11/11/2021
Effective Date	2/15/2022
Maturity Date	8/15/2022
Fixed Direction	Payer
Fixed Rate	1.055%
Fixed Leg Payment Freq.	3M
Fixed Leg Payment Offset	2 Days
Floating Rate Index	JPY-TONA-OIS Compound
Float Leg Index Tenor	1D
Float Leg Payment Freq.	3M
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	2 Days
Reset Relative To	End Period
Float Leg Fixing Adj Calendar	JPTO
Status	Cleared
Date Roll	15
Upfront Fee 1	Cash compensation
Upfront Fee 1 Payment Date	12/07/2021
Upfront Fee 2	Net fixed and float (LIBOR) coupon
Upfront Fee 2 Payment Date	2/17/2022*
Float Leg Spread	Fixed spread adjustment (0.00835%)

- = Economic preserved
- = Economic changed/added

* Original coupon payments are delayed by 2 days (payment offset)

Methodology for Converting IBOR Swaps to RFR Swaps

Ex. 3) **Seasoned** LIBOR swap with **different** fixed + floating coupon dates converted to **two** RFR OIS (JPY example)

JPY 3M LIBOR IRS	
Currency	JPY
Notional	100,000,000
Trade Date	11/11/2021
Effective Date	11/15/2021
Maturity Date	11/15/2022
Fixed Direction	Payer
Fixed Rate	0.645%
Fixed Leg Payment Freq.	6M
Fixed Leg Payment Offset	n/a
Floating Rate Index	JPY-LIBOR-BBA
Float Leg Index Tenor	3M
Float Leg Payment Freq.	3M
Float Leg Pay Adj Calendar	JPTO
Float Leg Pay Offset	n/a
Float Leg Compounding Method	None
Reset Relative To	Begin Period
Float Leg Fixing Adj Calendar	GBLO
Date Roll	15
Status	Terminated



JPY TONA OIS Replacement – 1	
Currency	JPY
Notional	100,000,000
Trade Date	11/11/2021
Effective Date	2/15/2022
Maturity Date	11/15/2022
Fixed Direction	Payer
Fixed Rate	0.645%
Fixed Leg Payment Freq.	6M
Fixed Leg Payment Offset	2 Days
Floating Rate Index	JPY-TONA-OIS Compound
Float Leg Index Tenor	1D
Float Leg Payment Freq.	3M
Float Leg Pay Adj Calendar	JPTO
Stub Type	Short Initial
First Regular Period Start Date	5/16/2022
Upfront Fee 1	Cash compensation
Upfront Fee 1 Payment Date	12/07/2021
Upfront Fee 2	Fixed leg accrual
Upfront Fee 2 Payment Date	5/18/2022
Float Leg Spread	Fixed spread adjustment (0.00835%)
JPY TONA OIS Replacement – 2	
Product Type	OIS
Notional	¥1
Effective Date	11/15/2021 (start of IBOR accrual)
Maturity Date*	2/17/2022 (end of IBOR accrual)
Upfront Fee	IBOR leg accrual
Upfront Fee Payment Date	2/17/2022

= Economic preserved *Note: Please reference trade linkage details in next section*

= Economic changed/added

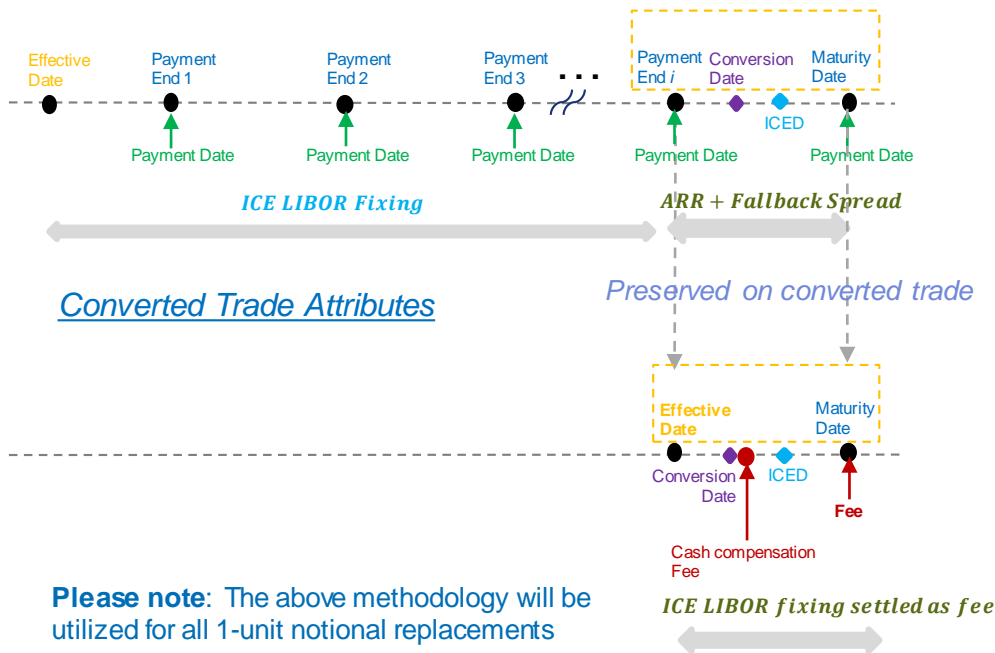
* Payment days offset will be applied to the end of IBOR accrual

Methodology for Converting IBOR Swaps to RFR Swaps

Conversion of Vanilla Seasoned Swap: Swap in Final Floating Coupon Period

Pricing and Termination of IBOR Swap

Pricing and other calculation same as previous slide



Please note: The above methodology will be utilized for all 1-unit notional replacements

Conversion Methodology

- ✓ No forward starting RFR Swap is booked since the swap is in the last coupon period
- ✓ The known IBOR payment and fixed coupon payment are settled as a fee on a new RFR Swap that pays on the IBOR maturity date + payment offset
- ✓ Notional = 1-unit
- ✓ Effective date will match the start of the current LIBOR payment period.
 - Maturity date will match the fee payment date and payment frequency will be set to "1T".
- ✓ Upfront fee is added to RFR OIS to move the cash compensation
- ✓ Override the below attributes to market standard RFR convention for IBOR leg:
 - Index Name and Tenor
 - Fixing Offset and Calendar
 - Payment Offset
 - ISDA fixed spread adj. added to compounded RFR leg as simple interest amount

Methodology for Converting IBOR Swaps to RFR Swaps

Conversion of Vanilla Swap with Stubs

Pricing of Terminated IBOR

- ✓ Stub periods with known fixings but unsettled will use the IBOR fixing(s) and payment dates. These stubs are priced the same way as regular IBOR coupon periods
- ✓ Forward starting stub periods are priced using ISDA Fallback pricing protocol i.e., compound the RFR by backward shifting the stub period by 2 business day and add the respective ISDA fallback spread
- ✓ ISDA Fallback spread is derived by interpolating the ISDA Fallback Spread for the stub IBOR index tenors (stub tenors are supported on all IBOR products at CME, excluding OIS)
- ✓ All regular periods in the swap are priced using the methodology outlined in previous slides

Converted Trade Attributes

- ✓ Stub periods with known fixing but unsettled will use the IBOR rate as a fee defined on the converted swap
- ✓ Forward starting stub periods retain the stub period's start date and end date
- ✓ **Daily compounded RFR will be used to calculate the stub rate**
- ✓ For forward starting stub, the difference of ISDA Fallback Spread for the stub and the ISDA Fallback spread for regular swap index will be cash settled as part of cash compensation
- ✓ Standard RFR payment offsets are added to fixed and float payments including stub period
- ✓ All regular coupon periods in the swap are converted using the methodology outlined in previous slides

Methodology for Converting IBOR Swaps to RFR Swaps

Ex. 4) Vanilla LIBOR swap with **stub interpolation** converted to RFR OIS (JPY example)

= Economic preserved
 = Economic changed/added

JPY 6M LIBOR IRS	
Currency	JPY
Notional	50,000,000
Trade Date	5/1/2021
Effective Date	5/1/2022
Maturity Date	6/15/2023
Stub Type	Short Initial
First Regular Period Start Date	6/15/2022
Stub Index 1	1M LIBOR
Stub Index 2	3M LIBOR
Stub Payment Offset	n/a
Fixed Direction	Payer
Fixed Rate	1.055%
Fixed Leg Payment Freq.	6M
Fixed Leg Payment Offset	n/a
Floating Rate Index	JPY-LIBOR-BBA
Float Leg Index Tenor	6M
Float Leg Payment Freq.	6M
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	n/a
Float Leg Compounding Method	None
Reset Relative To	Begin Period
Float Leg Fixing Adj Calendar	GBLO
Status	Terminated



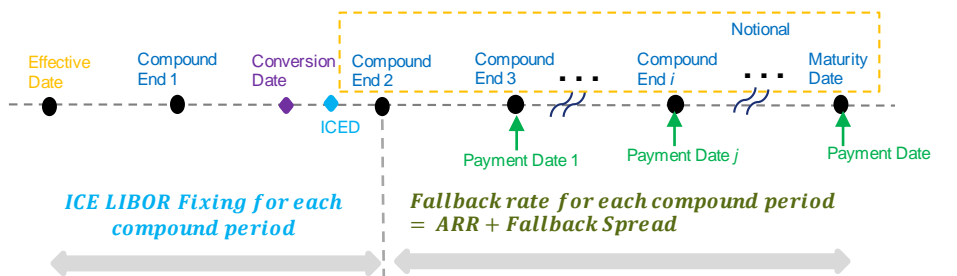
JPY TONA OIS Replacement	
Currency	JPY
Notional	50,000,000
Trade Date	5/1/2021
Effective Date	5/1/2022
Maturity Date	6/15/2023
Stub Type	Short Initial
First Regular Period Start Date	6/15/2022
Stub Rate	Daily compounded rate
Stub Period Spread	Fixed spread adjustment (0.05809%)
Stub Payment Offset	2 Days
Fixed Direction	Payer
Fixed Rate	1.055%
Fixed Leg Payment Freq.	6M
Fixed Leg Payment Offset	2 Days
Floating Rate Index	JPY-TONA-OIS Compound
Float Leg Index Tenor	1D
Float Leg Payment Offset	2 Days
Reset Relative To	End Period
Float Leg Fixing Adj Calendar	JPTO
Status	Cleared
Upfront Fee	Cash compensation
Upfront Fee Payment Date	12/7/2021
Float Leg Spread	Fixed spread adjustment (0.05809%)

Methodology for Converting IBOR Swaps to RFR Swaps

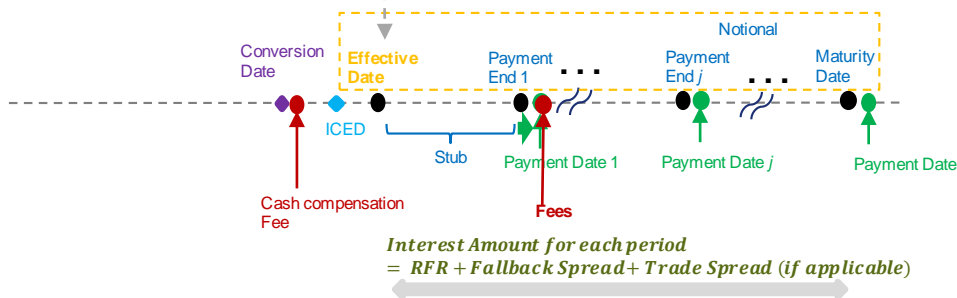
Conversion of Compounding Swap: Trade has different compounding frequency vs payment frequency e.g., 1M vs 3M

Pricing and Termination of IBOR Swap

Pricing and other calculation same as previous slides



Converted Trade Attributes



Conversion Methodology

- ✓ Book a forward starting RFR swap with Effective date set as the next compound period start date immediately following ICED. Note the payment accruals are preserved. RFR by default compounds every 1D
- ✓ Notional for the RFR Swap is the same notional as IBOR trade
- ✓ Create stub with regular period start date set to next payment start date
- ✓ Change Leg Spread as ISDA Fallback spread + Trade spread (if applicable)
- ✓ Any known IBOR payments or fixed coupon payments that is accrued but not paid is settled as fees as per the new payment dates
 - The payment based on the known IBOR is derived by accruing the known IBOR fixings inclusive of any trade spread using the compounding convention on IBOR trade
 - ISDA Fallback spread for the stub on the converted swap will be part of the fees

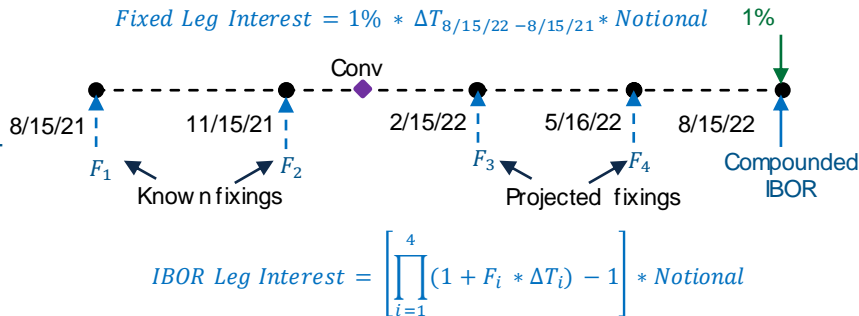
Methodology for Converting IBOR Swaps to RFR Swaps

Example of Compounding swaps: Forward Fees Computation example

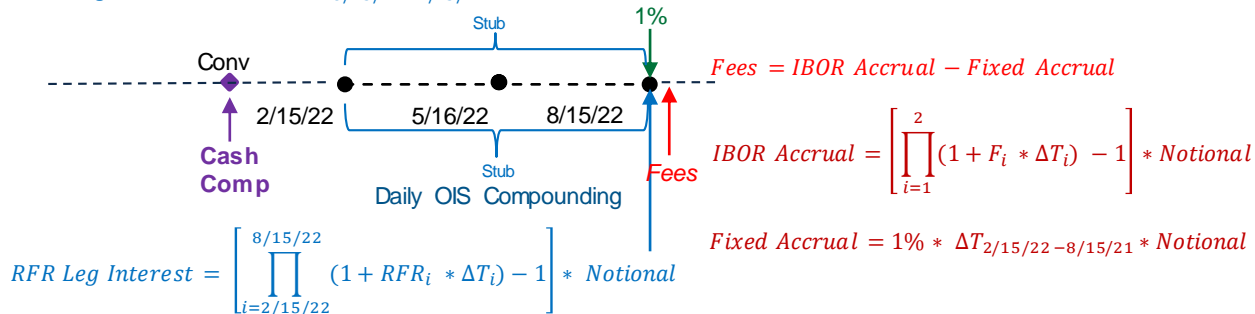
3M IBOR vs 1% fixed IRS
 Start= 8/15/21; Maturity = 8/15/22
 Fixed Pays 1Y, Float Receives
 payment on 1Y frequency with
 compounding frequency 3M and FLAT
 compounding



RFR vs 1% fixed IRS
 Start= 2/15/22; Maturity = 8/15/22
 Fixed Pays 1Y, Float Receives 1Y
 with ISDA OIS compounding



Fixed Leg Interest = $1\% * \Delta T_{8/15/22 - 2/15/22} * Notional$



Methodology for Converting IBOR Swaps to RFR Swaps

Ex. 5) **Compounding** LIBOR swap converted to RFR OIS (JPY example)

JPY 3M LIBOR IRS	
Currency	JPY
Notional	100,000,000
Trade Date	8/13/2021
Effective Date	8/15/2021
Maturity Date	8/15/2023
Fixed Direction	Payer
Fixed Rate	1%
Fixed Leg Payment Freq.	1Y
Fixed Leg Payment Offset	n/a
Floating Rate Index	JPY-LIBOR-BBA
Float Leg Index Tenor	3M
Float Leg Payment Freq.	1Y
Float Leg Accrual Freq.	3M
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	n/a
Float Leg Compounding Method	None
Reset Relative To	Begin Period
Float Leg Fixing Adj Calendar	GBLO
Date Roll	15
Status	Terminated



JPY TONA OIS Replacement	
Currency	JPY
Notional	100,000,000
Trade Date	8/13/2021
Effective Date	2/15/2022
Maturity Date	8/15/2023
Fixed Direction	Payer
Fixed Rate	1%
Fixed Leg Payment Freq.	1Y
Fixed Leg Payment Offset	2 Days
Floating Rate Index	JPY-TONA-OIS Compound
Float Leg Index Tenor	1D
Float Leg Payment Freq.	1Y
Float Leg Accrual Freq.	1Y
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	2 Days
Stub Type	Short Initial
First Regular Period Start Date	8/15/2022
Status	Cleared
Date Roll	15
Upfront Fee 1	Cash compensation
Upfront Fee 1 Payment Date	12/07/2021
Upfront Fee 2	Net fixed and float (LIBOR) coupon
Upfront Fee 2 Payment Date	8/17/2022
Float Leg Spread	Fixed spread adjustment (0.00835%)

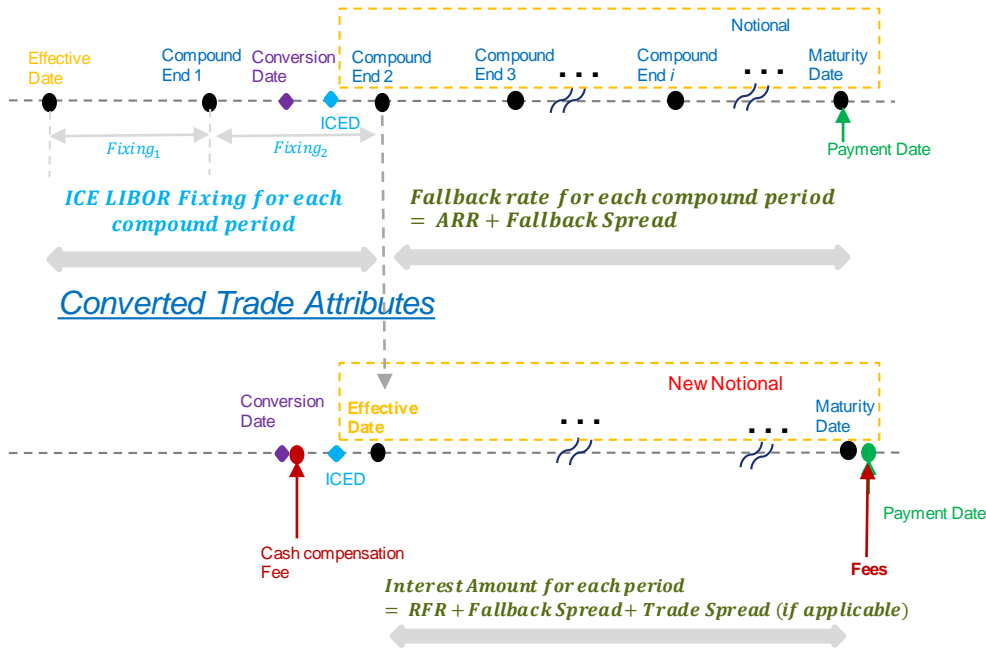
- = Economic preserved
- = Economic changed/added

Methodology for Converting IBOR Swaps to RFR Swaps

Conversion of Zero-Coupon Swap: Trade compounds more frequently but only pays once at maturity

Pricing and Termination of IBOR Swap

Pricing and other calculation same as previous slides



Conversion Methodology

- ✓ Book a forward starting RFR swap with Effective date set as the next compound period start date. Note the payment accruals are preserved. RFR by default compounds every 1D
- ✓ Fixed Rate is removed (if applicable), and the compounded interest is set to Known amount
- ✓ Notional for the Swap adjusted as notional accrued based on the known IBOR fixing inclusive of trade spread (if applicable) using the Swap compounding convention. E.g., Notional for a RFR swap where two IBOR fixings are known, and trade has no spread and FLAT compounding convention will be computed as

$$\text{New Notional} = \text{Notional} * (1 + \text{Fixing}_1 * t_1) * (1 + \text{Fixing}_2 * t_2)$$

- ✓ Change Leg Spread as ISDA Fallback spread + Trade spread (if applicable)
- ✓ Any known IBOR payments that is accrued but not paid is settled as fees as per the new payment date

$$\text{Fees} = \text{New Notional} - \text{Notional}$$

Methodology for Converting IBOR Swaps to RFR Swaps

Ex. 6) **Zero Coupon** LIBOR Swap converted to RFR OIS (JPY example)

JPY 6M LIBOR IRS	
Currency	JPY
Notional	100,000,000
Trade Date	9/13/2021
Effective Date	9/15/2021
Maturity Date	9/15/2022
Fixed Direction	Payer
Fixed Rate	1%
Fixed Leg Payment Freq.	1T
Fixed Leg Payment Offset	n/a
Floating Rate Index	JPY-LIBOR-BBA
Float Leg Index Tenor	6M
Float Leg Payment Freq.	1T
Float Leg Accrual Freq.	6M
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	n/a
Float Leg Compounding Method	None
Reset Relative To	Begin Period
Float Leg Fixing Adj Calendar	GBLO
Date Roll	15
Status	Terminated



JPY TONA OIS Replacement	
Currency	JPY
Notional (adjusted)	102,325,845
Trade Date	9/13/2021
Effective Date	3/15/2022
Maturity Date	9/15/2022
Fixed Direction	Payer
Known Amount (replaces fixed rate)	1,000,000
Fixed Leg Payment Freq.	1T
Fixed Leg Payment Offset	2 Days
Floating Rate Index	JPY-TONA-OIS Compound
Float Leg Index Tenor	1D
Float Leg Payment Freq.	1T
Float Leg Accrual Freq.	1T
Float Leg Pay Adj Calendar	JPTO
Float Leg Payment Offset	2 Days
Reset Relative To	End Period
Float Leg Fixing Adj Calendar	JPTO
Status	Cleared
Date Roll	15
Upfront Fee 1	Cash compensation
Upfront Fee 1 Payment Date	12/07/2021
Upfront Fee 2	IBOR accrual (New Notional – Notional)
Upfront Fee 2 Payment Date	9/17/2022
Float Leg Spread	Fixed spread adjustment (0.05809%)

- = Economic preserved
- = Economic changed/added

Methodology for Converting IBOR Swaps to RFR Swaps

Conversion (splitting) of Basis Swaps

Step 1: Convert Basis Swaps to Pairs of Fixed/Float IRS

- ✓ This process occurs on **Friday, September 24th**
- ✓ Fixed rates are set such that the payments fully offset between swap pairs
- ✓ Fixed rates will be computed based on the break-even rate of the “larger” index tenor (e.g., ‘6M’ for 3M vs. 6M basis)
- ✓ Each floating leg is carried over to a new swap. No change to economics on these floating legs so notional, direction, spread, etc. are maintained
- ✓ **No compensation** is included with this initial conversion as portfolio NPVs remain unchanged

Step 2: Convert Fixed/Float IRS to OIS

- ✓ All swaps will be fixed/float IRS at the time of conversion so pricing will follow the same methodology as seasoned, spot, and forward starting fixed/float IRS outlined in previous slides

Methodology for Converting IBOR Swaps to RFR Swaps

Ex. 8) **Basis Swap** converted to **two** Fixed/Float IRS (JPY example)

JPY LIBOR Basis Swap	
Currency	JPY
Notional	100,000,000
Direction	Pay 6M, Rec 3M
Effective Date	1/15/2022
Maturity Date	1/15/2023
Floating Rate Index 1	3M JPY-LIBOR-BBA
Floating Rate Index 2	6M JPY-LIBOR-BBA
Compounding Method	Flat (3M Leg)
Float Leg Day count	ACT/360
Float Leg Pay BusDay Adj Conv	Mod-Following
Float Leg Pay Adj Calendar	JPTO
Float Leg 1 Pay Freq	3M
Float Leg 2 Pay Freq	6M
Float Leg 1 Spread	2.9 bps
Status	Terminated



JPY LIBOR IRS Replacement – 1	
Currency	JPY
Notional	100,000,000
Direction	Pay Fixed
Fixed Rate	1.32% (6M par rate computed by CME)
Effective Date	1/15/2022
Maturity Date	1/15/2023
Floating Rate Index	JPY-LIBOR (3M)
Compounding Method	Flat
Float Leg Pay Freq	3M
Float Leg Spread	2.9 bps
Status	Cleared

JPY LIBOR IRS Replacement – 2	
Currency	JPY
Notional	100,000,000
Direction	Rec Fixed
Fixed Rate	1.32% (6M par rate computed by CME)
Effective Date	1/15/2022
Maturity Date	1/15/2023
Floating Rate Index	JPY-LIBOR (6M)
Compounding Method	None
Float Leg Pay Freq	6M
Float Leg Spread	n/a
Status	Cleared

Note: Please reference trade linkage details on slide 34

- = Economic preserved
- = Economic changed/added

Methodology for Converting IBOR Swaps to RFR Swaps

Conversion of IBOR swaps post Index Cessation Effective Date (Swaption Expiries)

Pricing of Terminated IBOR

- ✓ CME will continue to clear spot starting or forward starting fixed/float IBOR swaps following the applicable Index Cessation Effective Date. All such swaps will be terminated and replaced with the respective RFR OIS as part of CME's end of day processing
- ✓ CME will no longer clear in-scope IBOR basis swaps and FRAs following the conversion to fixed/float IRS
- ✓ These IBOR IRS will follow the same methodology as forward starting fixed/float IRS outlined in previous slides

Converted Trade Attributes

- ✓ All swaps will be fixed/float IRS at the time of conversion so the attributes will follow the same methodology as spot and forward starting fixed/float IRS outlined in previous slides
- ✓ Cash compensation will be added in the form of an upfront fee to the replacement swap

Agenda

- 1 Introduction to Conversion Plan
.....
- 2 ISDA Fallback Pricing Protocol
.....
- 3 IBOR Conversion Scenarios and RFR Replacement(s)
.....
- 4 **Operational Processing**

Operational Processing: EOD Timeline

Tentative EOD Timeline for Dec 3rd, Dec 17th, Jan 3rd and Jan 4th Conversions

7:00 pm ET: CME end-of-day close. CME will begin a full clearing cycle with conversion processing included.

7:10 – 7:20 pm ET: CME completes netting/blending for all cleared LIBOR trades. This process finalizes the trade population for conversion. Corresponding FpML confirmations are published.

7:20 – 8:00 pm ET: Conversion processing begins to terminate IBOR swaps and book RFR replacements with all relevant fees, to include cash compensation. CME publishes all corresponding FpML terminations and clearing confirmed messages.

- *CME will run settlements to compute VM, PAA on all swaps*

8:00 – 8:30 pm ET: CME publishes the EOD IRS Trade Register showing all new and terminated trades.

Dec 3rd Conversion + 2 (Tuesday, Dec 7) – CHF/JPY cash compensation fees are banked

Dec 17th Conversion + 1 (Monday, Dec 20) – GBP cash compensation fees are banked

Please note the following:

- All times are **estimates** and may vary on each conversion date (NR processing times are ~1 hour earlier)
- Beginning Jan 4, 2022, the conversion processing continues daily

Operational Processing: Sequencing of Events

Steps to Convert IBOR Swaps to Market Standard RFR OIS

—The below conversion steps occur on Dec 3rd, Dec 17th, Jan 3rd, Jan 4th and daily thereafter—

Step 1: Price IBOR Swaps on Conversion Date

- Eligible IBOR swaps are valued using the ISDA Fallback Pricing Protocol (Supplement 70).

Step 2: Convert IBOR Swaps to Replacement RFR Swap(s)

- New RFR OIS replacement(s) are created, and the fixed spread adjustment is applied to the RFR leg.
- Where applicable, known fixed and floating accruals are calculated and added as an upfront fee.

Step 3: Price RFR Swaps on Conversion Date

- End-of-day pricing curves are leveraged to price new RFR swaps.

Step 4: Compute Cash Compensation and Add as Upfront Fee

- Cash compensation is calculated to account for NPV change between the terminated IBOR swap and replacement swap(s).
- All compensation amounts are settled as upfront fees on the replacement RFR OIS.
 - *Cash Compensation = Price of IBOR Swap – Price of RFR Swap*

Step 5: Publish all Messaging and Reporting to Clearing Firms

- Termination messages are sent for all terminated IBOR swaps. A unique “terminating event” is applied to these swaps.
- Clearing Confirmed messages are sent for all replacement swaps. A unique “originating event” is applied to these swaps.
- IRS Trade Register report is published with all terminated and new swaps, as well as relevant upfront fees.

Operational Processing: Variation Margin and Cash Compensation

Variation Margin and Cash Compensation Example (IRS Trade Register view)

Value Date	Cleared Trade ID	Floating Rate Index	Status	NPV	NPV Adj.*	Previous NPV Adj.	Variation	Upfront Payment	FEE_TYPE	Payment Date	Net Cash Flow
12/17/2021	12345	GBP-LIBOR-BBA	TERMINATED	0	0	55,000.00	-55,000.00	-	-	-	-55,000.00
12/17/2021	67890	GBP-SONIA-OIS Compound	CLEARED	56,000.00	60,000.00	0	60,000.00	-4,000.00	UPFRONT_FEE	12/20/2021	56,000.00

Cash Compensation	LIBOR Swap Valuation (12/17)	56,000.00	OIS Swap Valuation (12/17)	60,000.00	PnL Change	4,000.00
-------------------	------------------------------	-----------	----------------------------	-----------	------------	----------

Value Date	Cleared Trade ID	Floating Rate Index	Status	NPV	NPV Adj.	Previous NPV Adj.	Variation	Upfront Payment	FEE_TYPE	Payment Date	Net Cash Flow
12/20/2021	67890	GBP-SONIA-OIS Compound	CLEARED	61,000.00	61,000.00	60,000.00	1,000.00	-	-	-	1,000.00

Calculation Breakdown (12/17)

$$\begin{aligned} \text{LIBOR Swap VM} &= \text{NPV Adj.} - \text{Previous NPV Adj.} \\ &= 0 - 55,000.00 = -55,000.00 \end{aligned}$$

$$\begin{aligned} \text{PnL Change} &= \text{NPV Adj. (RFR OIS)} - \text{NPV Adj. (LIBOR swap)} \\ &= 60,000.00 - 56,000.00 = 4,000.00 \end{aligned}$$

$$\begin{aligned} \text{Compensation Amount} &= (\text{NPV Adj. of LIBOR Swap} - \text{NPV Adj. of Replacement OIS}) \\ &= 56,000.00 - 60,000.00 = -4,000.00 \end{aligned}$$

$$\begin{aligned} \text{NPV Adj. (RFR OIS)} &= \text{NPV} - \text{Upfront Payment} \\ &= 56,000.00 - (-4,000.00) = 60,000.00 \end{aligned}$$

* NPV Adj. reflects the value of the swap removing any fee payments to be made the following business day

Note: In the event of multiple replacement OIS, all Adj NPVs are added to calculate the cash compensation

Operational Processing: Clearing Firm Messaging

FpML Messaging (Key Elements)

For each LIBOR swap, a termination message will be sent to clearing firms along with 1 to 2 clearing confirmed messages for the resultant RFR swap(s).

LIBOR Swap Termination

- Trade IDs

```
<partyTradeIdentifier>
  <partyReference href = "clearing_service"/>
  <tradeId tradeIdScheme = "cme_trade_id">12226701</tradeId>
  <tradeId tradeIdScheme = "client_trade_id">1234567</tradeId>
  <tradeId tradeIdScheme = "platform_trade_id">2226701</tradeId>
  <tradeId tradeIdScheme = "platform_side_id">2226701</tradeId>
  <tradeId tradeIdScheme = "block_trade_id">1666011</tradeId>
</partyTradeIdentifier>
```

- As part of conversion, a subset of trade IDs on the original LIBOR swap will be carried over to the replacement RFR swap(s). The unique CME Trade ID and USI/UTI will not be carried over.

Replacement RFR Swap – 1

- Trade IDs

```
<partyTradeIdentifier>
  <partyReference href = "clearing_service"/>
  <tradeId tradeIdScheme = "cme_trade_id">14356753</tradeId>
  <tradeId tradeIdScheme = "client_trade_id">1234567</tradeId>
  <tradeId tradeIdScheme = "platform_trade_id">2226701</tradeId>
  <tradeId tradeIdScheme = "platform_side_id">2226701</tradeId>
  <tradeId tradeIdScheme = "block_trade_id">1666011</tradeId>
</partyTradeIdentifier>
```

Replacement RFR Swap – 2 (where applicable)

```
<partyTradeIdentifier>
  <partyReference href = "clearing_service"/>
  <tradeId tradeIdScheme = "cme_trade_id">14356754</tradeId>
  <tradeId tradeIdScheme = "client_trade_id">1234567</tradeId>
  <tradeId tradeIdScheme = "platform_trade_id">2226701</tradeId>
  <tradeId tradeIdScheme = "platform_side_id">2226701</tradeId>
  <tradeId tradeIdScheme = "block_trade_id">1666011</tradeId>
</partyTradeIdentifier>
```

Operational Processing: Clearing Firm Messaging

FpML Messaging (Key Elements)

For each LIBOR swap, a termination message will be sent to clearing firms along with 1 to 2 clearing confirmed messages for the resultant RFR swap(s).

LIBOR Swap Termination

- Terminating Event and Status

```
<tradeDate>2020-02-13</tradeDate>
<clearedDate> 2020-12-17 </clearedDate>
<cme:terminatingEvent>INDEX_CONVERSION</cme:terminatingEvent>
<cme:status>TERMINATED</cme:status>
```

- Floating Index

```
<floatingRateCalculation>
  <floatingRateIndex>GBP-LIBOR-BBA</floatingRateIndex>
  <indexTenor>
    <periodMultiplier>6</periodMultiplier>
    <period>M</period>
```

- Terminated and replacement trade(s) are linked through the history element:

```
<cme:history>
  <cme:replacementTradeId tradelIdScheme = "cme_trade_id">14356753</cme:replacementTradeId>
  <cme:replacementTradeId tradelIdScheme = "cme_trade_id">14356754</cme:replacementTradeId>
  <cme:originalTradeId tradelIdScheme = "cme_trade_id">12226701</cme:originalTradeId>
</cme:history>
```

Replacement RFR Swap(s)

- Originating Event and Status

```
<tradeDate>2020-02-13</tradeDate>
<clearedDate> 2020-12-17 </clearedDate>
<cme:originatingEvent>INDEX_CONVERSION</cme:originatingEvent>
<cme:status>CLEARED</cme:status>
```

- Floating Index

```
<floatingRateCalculation>
  <floatingRateIndex>GBP-SONIA-OIS Compound</floatingRateIndex>
</floatingRateCalculation>
```

- Original LIBOR swap is referenced through the history element on each replacement:

```
<cme:history>
  <cme:originalTradeId tradelIdScheme = "cme_trade_id">12226701</cme:originalTradeId>
</cme:history>
```

Operational Processing: Trade Register Reporting

IRS Trade Register on Conversion Date

Terminated IBOR Swaps

- All terminated swaps are shown on the conversion date in a “TERMINATED” status
- Impacted swaps can be identified by “INDEX_CONVERSION” value in the IRSTR column “TERMINATING_EVENT”

Value Date	Cleared Trade ID	Platform ID	Client ID	CONVERTED_TRADE_ID	LEG2_INDEX	PRODUCT_TYPE	Status	NPV	Upfront Payment	FEE_TYPE	TERMINATING_EVENT
12/17/2021	12345	101234	Client123		GBP-LIBOR-BBA	SWAP	TERMINATED	-			INDEX_CONVERSION
12/17/2021	23932	101235	Client456		GBP-LIBOR-BBA	SWAP	TERMINATED	-			INDEX_CONVERSION

Replacement RFR OIS

- All replacement swaps are shown on the conversion date in a “CLEARED” status
- Cash compensation amounts are shown as upfront fees
- Replacement swaps can be identified by “INDEX_CONVERSION” value in the IRSTR column “ORIGINATING_EVENT”
- A **new** “CONVERTED_TRADE_ID” column will show the CME Trade ID of the original trade that was converted (**primary link**)

Value Date	Cleared Trade ID	Platform ID	Client ID	CONVERTED_TRADE_ID	LEG2_INDEX	PRODUCT_TYPE	Status	NPV	Upfront Payment	FEE_TYPE	ORIGINATING_EVENT
12/17/2021	20456	101234	Client123	12345	GBP-SONIA-OIS Compound	OIS	CLEARED	57,000	-1,000	UPFRONT_FEE	INDEX_CONVERSION
12/17/2021	20457	101235	Client456	23932	GBP-SONIA-OIS Compound	OIS	CLEARED	160,000	5,000	UPFRONT_FEE	INDEX_CONVERSION

Operational Processing: Indicative Analysis Reporting

IBOR to RFR Indicative Analysis Report

IBOR Swap Terms & Cash Compensation Fields

- Report provides the NPV for each replacement RFR swap, the cash compensation at the trade level, and key economics of the replacement RFR swap. All **production** position accounts are included.
- Publication will begin on **Monday, November 1, 2021**
- File name:** `IRS_IBORCONV_FFF_YYYYMMDD_EOD.csv`
- CSV report delivered to firm and client sFTP folders
 - All parties receiving Trade Registers today, who have GBP, JPY and CHF LIBOR exposure, will receive this report.

Report Population

- IBOR trades included if it is a business day in the calendar of the currency
- Any IBOR trade with a fixing between Report Publication Date + 1 business day and ICED will not be included in this report
 - Once the IBOR fixing is known, the trade will appear on this report
- Any IBOR trade maturing before ICED will not be included in this report
- Any IBOR trade that has been converted, either on Dec 3rd or Dec 17th, will no longer appear on this report
- The last publication date of this report is January 3, 2022

Column Header	Description	Sample Value
Value Date	Business Date	11/1/2021
Position Account ID	Id of the Position (Clearing) Account	3TTNN7
Cleared Trade ID	CME Trade ID of IBOR trade	9355844
Platform ID	SEF/Platform ID	7897868G9H
Client ID	Client reference ID	1423523IS
REG_TRADE_ID	USI	CCCIRS9355844
Firm ID	3-digit Clearing Firm ID	998
ORIGIN	HOUS or CUST	CUST
PRODUCT_TYPE	Type of IRS product	SWAP, BASIS, ZCS
Currency	3-digit currency code	GBP
NPV_NEW_INDEX	NPV of Replacement RFR Swap	2,266.34
NPV_PRIOR_INDEX	NPV of LIBOR Swap	2,244.28
NPV_ADJ_NEW_INDEX	ADJ NPV of Replacement RFR Swap	2,266.34
NPV_ADJ_PRIOR_INDEX	ADJ NPV of LIBOR Swap	2,244.28
NPV_ADJ_DIFF	Replacement RFR ADJ NPV minus LIBOR ADJ NPV	22.06
OFFSET_ADJ_AMT	Cash Compensation Amount / LIBOR ADJ NPV minus Replacement RFR ADJ NPV	-22.06
...

➤ See next slide for replacement RFR swap terms

Note: The `OFFSET_ADJ_AMT` may not always be equal and opposite to the `NPV_ADJ_DIFF` due to coupon(s) banking the following business day on the IBOR swap

Operational Processing: Indicative Analysis Reporting

IBOR to RFR Indicative Analysis Report (cont.)

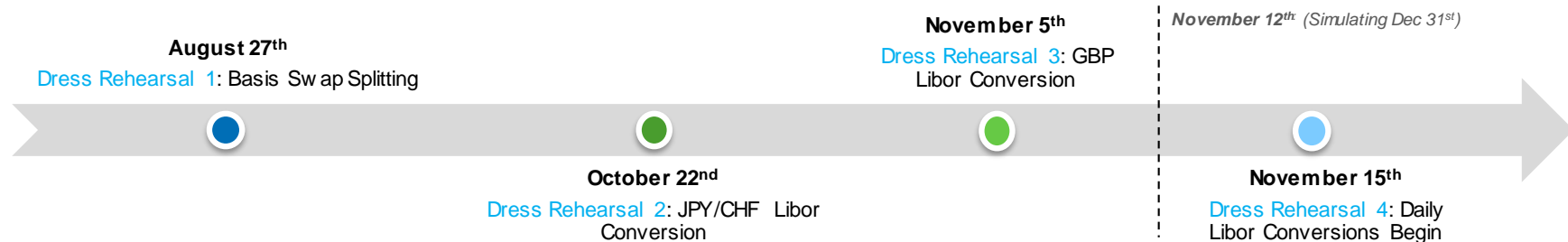
Replacement RFR Swap Terms – Summary & Leg 1

Column Header (Cont.)	Description	Sample Value
Effective Date	Start date of the Replacement RFR swap	3/7/2022
Maturity Date	Maturity date of the Replacement RFR swap	3/7/2027
Notional	Notional of the Replacement RFR swap; may be set to "1" for a subset of Replacement swaps	36,856,367.00
Direction	Direction of the Replacement RFR swap from the position account's perspective	P
Fixed Rate	Fixed rate of the Replacement RFR swap	0.05112
LEG1_TYPE	Fixed/floating leg of the Replacement RFR swap	FIXED
LEG1_START_DATE_ADJ_BUS_DAY_CONV	Business day convention applied to the Effective Date of the Replacement RFR swap	NONE
LEG1_START_DATE_ADJ_CAL	Calendar(s) applied to the Effective Date of the Replacement RFR swap	JPTO
LEG1_PAY_FREQ	Coupon payment frequency applied to the Replacement RFR swap	3M
LEG1_DAYCOUNT	Day count convention applied to the Replacement RFR swap	ACT/365.FIXED
LEG1_CALC_FREQ	Calculation (accrual) frequency applied to the Replacement RFR swap	3M
LEG1_ROLL_CONV	Roll convention applied to the Replacement RFR swap	21
LEG1_STUB_TYPE	Type of stub applied to the Replacement RFR swap	ShortInitial
LEG1_PAYMENT_DAYS_OFFSET	Number of business days the coupon settlement is delayed after the period end date for the Replacement RFR swap	2D

Replacement RFR Swap Terms – Leg 2

Column Header (Cont.)	Description	Sample Value
LEG2_TYPE	Fixed/floating leg of the Replacement RFR swap	FLOAT
LEG2_START_DATE_ADJ_BUS_DAY_CONV	Business day convention applied to the Effective Date of the Replacement RFR swap	NONE
LEG2_START_DATE_ADJ_CAL	Calendar(s) applied to the Effective Date of the Replacement RFR swap	JPTO
LEG2_PAY_FREQ	Coupon payment frequency applied to the Replacement RFR swap	6M
LEG2_DAYCOUNT	Day count convention applied to the Replacement RFR swap	ACT/365.FIXED
LEG2_CALC_FREQ	Calculation (accrual) frequency applied to the Replacement RFR swap	6M
LEG2_INDEX	Floating index (FRO) assigned to the Replacement RFR swap	GBP-SONIA-OIS Compound
LEG2_FIXING_DATE_BUS_DAY_CONV	Business day convention applied to the fixing date of the Replacement RFR swap	PRECEDING
LEG2_FIXING_DATE_CAL	Holiday calendar(s) applied to the fixing date of the Replacement RFR swap	JPTO
LEG2_ROLL_CONV	Roll convention applied to the Replacement RFR swap	21
LEG2_SPREAD	Fixed spread adjustment applied to the Replacement RFR swap	0.00835
LEG2_STUB_TYPE	Type of stub applied to the Replacement RFR swap	LongInitial
LEG2_PAYMENT_DAYS_OFFSET	Number of business days the coupon settlement is delayed after the period end date for the Replacement RFR swap	2D
FEE_AMOUNT	The known ICE LIBOR or Fixed coupon that is added to the Replacement RFR swap as an upfront fee	2,500.25
FEE_PAYMENT_DATE	Payment date of the known ICE LIBOR or Fixed coupon that is added to the Replacement RFR swap as an upfront fee	3/9/2022

IBOR Conversion Testing and Readiness Timeline: New Release



Dress Rehearsal 1 – August 27th

- CME runs a one-time splitting cycle for JPY and GBP basis sw aps on **Friday, August 27th** in the New Release (NR) environment
- CME will provide the ability to upload an **optional** test portfolio to NR accounts that covers basis sw ap combinations for firms with PROD exposure
- Basis sw aps (for these ccys) will no longer be supported in NR after this date

Dress Rehearsal 3 – November 5th

- CME runs a one-time conversion cycle for GBP Libor sw aps on **Friday, November 5th** in the New Release environment
- CME will provide the ability to upload an **optional** test portfolio to NR accounts that covers the various conversion scenarios under each currency
- The NR IRSTR (EOD) file will provide trade data for the terminated Libor sw aps and the newly established RFR OIS

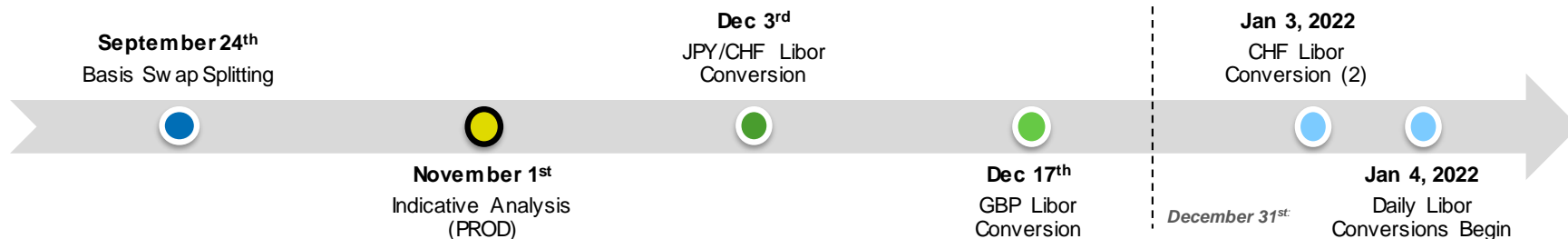
Dress Rehearsal 2 – October 22nd

- CME runs a one-time conversion cycle for JPY and CHF Libor sw aps on **Friday, October 22nd** in the New Release environment
- CME will provide the ability to upload an **optional** test portfolio to NR accounts that covers the various conversion scenarios under each currency
- The NR IRSTR (EOD) file will provide trade data for the terminated Libor sw aps and the newly established RFR OIS

Dress Rehearsal 4 – November 15th

- On **Monday, November 15th**, CME runs a conversion cycle for JPY, CHF and GBP Libor sw aps that fix between the corresponding NR Conversion Date (Oct 22 or Nov 5) and Friday, November 12th.
- For any JPY, CHF or GBP Libor sw aps cleared in NR on November 15th or thereafter, CME will run a daily conversion cycle to establish new RFR OIS

IBOR Conversion Testing and Readiness Timeline: Production



Basis Swap Splitting – September 24th

- CME runs a one-time splitting cycle for JPY and GBP basis swaps on **Friday, September 24th** in Production (PROD)
- Basis swaps (for these ccys) will no longer be supported by CME Clearing (in Production) after this date

Indicative Analysis in Production – November 1st

- Reporting will be based on production portfolios and provide:
 - Indicative cash compensation amounts
 - Indicative “to-be” portfolio consisting of key replacement RFR swap terms
- This report will be available at an acceptable frequency (TBD) and provide key economic and valuation terms for replacement swaps leading up to conversions

* For any JPY, CHF or GBP Libor swaps cleared on Jan 4th or thereafter, CME will run a daily conversion cycle (excludes seasoned swaps)

JPY/CHF Libor Conversion – December 3rd

- CME runs a one-time conversion cycle for JPY and CHF Libor swaps on **Friday, December 3rd** in the Production environment
- The PROD IRSTR (EOD) file will provide trade data for the terminated Libor swaps and the newly established RFR OIS

GBP Libor Conversion – December 17th

- CME runs a one-time conversion cycle for GBP Libor swaps on **Friday, December 17th** in the Production environment

Daily Libor Conversions Begin* – January 4th

- On **Monday, January 3rd**, CME runs a conversion cycle for CHF Libor swaps that fix between the Conversion Date (Dec 3) and Dec 31st.
- On **Tuesday, January 4th**, CME runs a conversion cycle for JPY and GBP Libor swaps that fix between the Conversion Date (Dec 17) and Dec 31st.

Disclaimer

Any implementation of the points discussed is subject to regulatory review, approval and implementation by CME.

ICE LIBOR is compiled and calculated solely by ICE Benchmark Administration Limited. ICE LIBOR® is a registered trademark of Intercontinental Exchange Holdings, Inc. and is used under license. However, ICE Benchmark Administration Limited shall not be liable (whether in negligence or otherwise) to any person for any error in ICE LIBOR, and ICE Benchmark Administration Limited shall not be under any obligation to advise any person of any error therein.

ICE BENCHMARK ADMINISTRATION LIMITED MAKES NO WARRANTY, EXPRESS OR IMPLIED, EITHER AS TO THE RESULTS TO BE OBTAINED FROM THE USE OF ICE LIBOR AND/OR THE FIGURE AT WHICH ICE LIBOR STANDS AT ANY PARTICULAR TIME ON ANY PARTICULAR DAY OR OTHERWISE. ICE BENCHMARK ADMINISTRATION LIMITED MAKES NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Neither Futures trading nor swaps trading are suitable for all investors, and each involves the risk of loss. Swaps trading should only be undertaken by investors who are Eligible Contract Participants (ECPs) within the meaning of Section 1a(18) of the Commodity Exchange Act. Futures and swaps each are leveraged investments and, because only a percentage of a contract's value is required to trade, it is possible to lose more than the amount of money deposited for either a Futures or swaps position. Therefore, traders should only use funds that they can afford to lose without affecting their lifestyles and only a portion of those funds should be devoted to any one trade because traders cannot expect to profit on every trade.

Any research views expressed those of the individual author and do not necessarily represent the views of the CME Group or its affiliates. The information within this presentation has been compiled by CME Group for general purposes only. CME Group assumes no responsibility for any errors or omissions. All examples are hypothetical situations, used for explanation purposes only, and should not be considered investment advice or the results of actual market experience.

All matters pertaining to rules and specifications herein are made subject to and are superseded by official rulebook of the organizations. Current rules should be consulted in all cases concerning contract specifications.

CME Group is a trademark of CME Group Inc. The Globe Logo, CME, Globex and Chicago Mercantile Exchange are trademarks of Chicago Mercantile Exchange Inc. CBOT and the Chicago Board of Trade are trademarks of the Board of Trade of the City of Chicago, Inc. NYMEX, New York Mercantile Exchange and ClearPort are registered trademarks of New York Mercantile Exchange, Inc. COMEX is a trademark of Commodity Exchange, Inc. All other trademarks are the property of their respective owners.

Copyright ©2021 CME Group. All rights reserved.

