

SECTION ZZZZ - CONTRACT RULES: ICE FUTURES SOFR SWAPNOTE FUTURES CONTRACTS¹

<i>ZZZZ.1</i>	Definitions
<i>ZZZZ.2</i>	Contract Specifications
<i>ZZZZ.3</i>	List of Notional Cashflows
<i>ZZZZ.4</i>	Price
<i>ZZZZ.5</i>	Last Trading Day
<i>ZZZZ.6</i>	Exchange Delivery Settlement Price (“EDSP”)
<i>ZZZZ.7</i>	Payment
<i>ZZZZ.8</i>	Default in Performance
<i>ZZZZ.9</i>	Force Majeure
<i>ZZZZ.10</i>	[Not Used]
<i>ZZZZ.11</i>	[Not Used]
<i>ZZZZ.12</i>	[Not Used]
<i>ZZZZ.13</i>	Statement in Relation to EDSP Formation Process ²
TABLE	Contract Details Specified to the Exchange for ICE Futures SOFR Swapnote Futures Contracts
SCHEDULE	Swapnote Swap Rate Interpolation Methodology for ICE Futures SOFR Swapnote Futures Contracts ³

¹ Amended 20 September 2021, 27 March 2023

² Amended 12 May 2015, 27 March 2023

³ Amended 12 May 2015, 27 March 2023



ZZZZ.1 DEFINITIONS

(a) Save as otherwise specified herein, words and phrases defined in the Regulations shall have the same meanings in these Contract Rules and in the Administrative Procedures.

(b) In these Contract Rules and the Administrative Procedures:

“Administrative Procedures” means the administrative procedures at Rule AAAAA implemented by the Exchange for the purposes of these Contract Rules;

“business day” means:

(i) in relation to the determination of the dates of the Last Trading Day and the Settlement Day for a Contract, a day on which the market, the Clearing House and banks in London and New York are open for business; and

(ii) in all other respects, any day on which banks in London and New York are open for business;

“Cashflow Calculation Period” means, in respect of a Cashflow Payment Date, the period from, and including, the first business day comprised in the Cashflow Payment Date Reference Period immediately preceding such Cashflow Payment Date up to, but excluding, the first business day comprised in the Cashflow Payment Date Reference Period in which such Cashflow Payment Date falls

“Cashflow Payment Date” means in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which such Contract relates, each date which falls on the day immediately following the last day of the immediately preceding Cashflow Payment Date Reference Period so that each Cashflow Payment Date Reference period runs from, and including, one Cashflow Payment Date up to but excluding the next Cashflow Payment Date and the first Cashflow Payment Date Reference Period starts on, and includes, the Effective Date and the final Cashflow Payment Date Reference Period ends on the day immediately preceding the Termination Date;

“Cashflow Payment Date Reference Period” means, in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which such Contract relates, the period specified by the Exchange in relation to such Contract in the Table;

“Contract” means a contract made expressly or impliedly under these Contract Rules, for the sale and purchase of one or more lots in respect of a Set of Relevant Payments specified by the Exchange in the Table, and “registered Contract” means a Contract registered by the Clearing House;

“Currency of the Contract” means, in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which such contract relates, the Currency specified by the Exchange in relation to such Contract in the Table;

“delivery month” means, in respect of a Set of Relevant Payments specified by the Exchange in the Table, each month specified by the Exchange in relation to such Set of Relevant Payments in the Table;

“EDSP”	means the Exchange Delivery Settlement Price and has the meaning attributed to it in Rule ZZZZ.6;
“Effective Date”	means, in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which such Contract relates, the day which is specified as such by the Exchange in relation to such Contract in the Table;
“Gross”	means, in respect of any payment, the gross amount of such payment free from any withholding or deduction for or on account of any present or future tax, levy, impost, duty, charge, assessment or fee of any nature (including interest, penalties and additions thereto) that is imposed by any government or other taxing or competent authority in respect of any such payment;
“interest rate basis”	means, for the purposes of calculating the EDSP and the Relevant Day Count Fraction in respect of a Contract for a particular delivery month and a particular Set of Relevant Payments, the interest rate basis specified by the Exchange in relation to such Contract in the Table;
“Last Trading Day”	means, in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which such Contract relates, the day specified by the Exchange in the Table (subject to Rule ZZZZ.5);
“List of Notional Cashflows”	has the meaning attributed to it in Rule ZZZZ.3(a);
“lot”	means, in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which it relates, the unit of trading specified by the Exchange in relation to such Contract in the Table;
“Minimum Rate Criteria”	means, in respect of the Rate Source Page, the Swap Rates that must be published, which are: <ul style="list-style-type: none">(i) the Swap Rate on the Rate Source Page for the tenor equal to the period commencing on the Effective Date and ending on the first Cashflow Payment Date; and(ii) a Swap Rate on the Rate Source Page for a tenor equal to or greater than the period commencing on the Effective Date and ending on the Termination Date; and(iii) a Swap Rate on the Rate Source Page for a tenor equal to the period commencing on the Effective Date and ending on a Cashflow Payment Date, other than the Swap Rates determined in (i) or (ii) above.
“Net Present Value”	has the meaning attributed to it in Rule ZZZZ.6(e);
“Notional Fixed Rate”	means, in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which such Contract relates, the fixed rate of interest (expressed as a percentage) specified by the Exchange in respect of such Contract in the Table;
“quarterly delivery month”	means March, June, September or December;
“Rate Source Page”	means an electronic page which is customarily used for the purpose of displaying a particular Reference Rate and references to a Rate Source

Page shall be construed so as to include any successor to such Rate Source Page from time to time determined by the Exchange;

“Rate Source Page Dates”	are the dates on the Rate Source Page for which a Swap Rate is quoted;
“Reference Rates”	has the meaning attributed to it in Rule ZZZZ.6(a);
“Relevant Day Count Fraction”	<p>in respect of the Cashflow Calculation Period for which the Exchange has specified an interest rate basis shall be calculated as follows:</p> <ul style="list-style-type: none">(i) where the numerator stated in the interest rate basis is:<ul style="list-style-type: none">(A) “Actual”, the numerator of the Relevant Day Count Fraction shall be the number of days comprised in the Cashflow Calculation Period in respect of which the relevant determination is to be made;(B)(ii) where the denominator stated in the interest rate basis is:<ul style="list-style-type: none">(A) “360”, then the denominator of the Relevant Day Count Fraction shall be three hundred and sixty; and(iii) the Relevant Day Count Fraction shall be the numerator divided by the denominator and rounded to eight decimal places. Where the Relevant Day Count Fraction is not an exact multiple of 0.00000001, it will be rounded to the nearest 0.00000001 or, where the Relevant Day Count Fraction is an exact uneven multiple of 0.000000005, to the nearest higher 0.00000001;
“Relevant Floating Rate”	means the floating interest rate specified by the Exchange in the Table and references to a “Relevant Floating Rate” shall be construed so as to include any successor to such Relevant Floating Rate from time to time determined by the Exchange;
“Set of Relevant Payments”	<p>means the Buyer’s right to receive and the Seller’s obligation to pay a series of Gross payments in the Currency of the Contract which in aggregate are equal to payments:</p> <ul style="list-style-type: none">(i) on each Cashflow Payment Date of a Gross amount equal to the product of: (i) the notional principal amount of the unit of trading which constitutes one lot; (ii) the Notional Fixed Rate; and (iii) the Relevant Day Count Fraction for the Cashflow Calculation Period applicable to such Cashflow Payment Date; and(ii) on the Termination Date of a Gross amount equal to the notional principal amount of the unit of trading which constitutes one lot except that where the Termination Date is not a business day, the date for payment of the notional principal amount shall be deemed to be the next business day;
“Settlement Day”	means, in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which such Contract relates, the first business day after the Last Trading Day applicable to such Contract;

- “SOFR” means the Secured Overnight Financing Rate index as published by the Benchmark Administrator or its agent;
- “Swapnote Swap Rate Interpolation Methodology” has the meaning described in the Schedule;
- “Swap Rate” means, in respect of a notional fixed-floating interest rate swap contract denominated in a particular currency with a particular tenor, an interest rate expressed as a percentage which when multiplied by the notional principal amount in respect of which such swap contract is notionally made and by the fixed rate day count fraction calculated in the manner specified therein represents the amount that a fixed rate payer would have to pay on each of the dates specified therein for fixed rate payments, against receiving floating rate amounts on the dates specified therein for floating-rate payments equal to the product of: (i) the floating rate specified therein; (ii) the notional principal amount of the swap specified therein; and (iii) the floating rate day count fraction calculated in the manner specified therein;
- “Termination Date” means, in respect of a Contract for a particular delivery month and the Set of Relevant Payments to which such Contract relates, the anniversary of the Effective Date specified by the Exchange in relation to such Contract in the Table; and
- “U.S. Dollar” and “\$” mean the lawful currency of the United States of America.
- (c) References to “specified by the Exchange in the Table” means as specified in the column in the Table applicable to the relevant currency and period. The Table and Schedule attached hereto form part of these Contract Rules. Footnotes do not form part of these Contract Rules and do not have legal effect except where the context otherwise allows.

ZZZZ.2 CONTRACT SPECIFICATION

- (a) Each Contract shall be for one or more lots for the delivery month specified.

ZZZZ.3 LIST OF NOTIONAL CASHFLOWS

- (a) In respect of each delivery month for a Contract the Exchange shall publish prior to making such delivery month available for trading, by notice, a “List of Notional Cashflows” which shall specify the Cashflow Payment Dates, Relevant Day Count Fractions and the notional cashflow for such delivery month.

ZZZZ.4 PRICE

- (a) The Contract price shall be expressed in “Price Points” per \$100 nominal.
- (b) The value per lot of one Price Point shall be as specified by the Exchange in the Table.
- (c) The minimum price movement shall be 0.005 Price Points, 0.01 Price Points or 0.02 Price Points as specified by the Exchange in the Table.

ZZZZ.5 LAST TRADING DAY

(a) In respect of Contracts for a particular delivery month and for a particular Set of Relevant Payments, on the Last Trading Day:

- (i) trading in such Contracts shall cease at such time as may be specified in the Administrative Procedures; and
- (ii) the Exchange will calculate the EDSP for such Contracts in accordance with Rule ZZZZ.6.

(b) If, at any time after the close of trading two business days prior to the day which would have been the Last Trading Day in respect of a delivery month, it becomes known to the Exchange that the day which would have been the Last Trading Day will not be a business day, then the business day next following such day shall become the Last Trading Day in respect of that delivery month and the Exchange shall post a notice to that effect on the Market.

(c) If, at any time after the close of trading two business days prior to the day which is scheduled to be the Last Trading Day in respect of a delivery month, it becomes known to the Exchange that the day which would have been the business day immediately preceding the third Wednesday in that month will not be a business day, then this shall not affect the Last Trading Day which shall (subject to Rule ZZZZ.5(b)) remain the day it was scheduled to be.

ZZZZ.6 EXCHANGE DELIVERY SETTLEMENT PRICE (“EDSP”)

(a) The EDSP shall be calculated by reference to the Reference Rates. Subject to any provisions to the contrary contained in these Contract Rules or the Regulations, the Reference Rates in respect of a Contract and the Set of Relevant Payments to which they relate shall be the Swap Rates appearing on the Rate Source Page specified by the Exchange in the Table and applicable to the Relevant Floating Rate specified by the Exchange in the Table so that in respect of each Cashflow Payment Date, the Reference Rate applicable to such Cashflow Payment Date shall be the relevant Swap Rate appearing on such Rate Source Page (at the time specified by the Exchange from time to time) on the Last Trading Day in respect of the Currency of the Contract and a tenor equal to the period commencing on the Effective Date and ending on such Cashflow Payment Date.

(b) In the event that a Swap Rate relating to one of the Cashflow Payment Dates is not published on the Rate Source Page specified by the Exchange in the Table, and provided that the Minimum Rate Criteria are met, the Reference Rate applicable to such Cashflow Payment Date shall be determined using the Swapnote Swap Rate Interpolation Methodology, as defined in the Schedule. Where the Reference Rate determined by this method is not an exact multiple of 0.00001, it will be rounded to the nearest 0.00001 or, where the Reference Rate determined by this method is an exact uneven multiple of 0.000005, to the nearest higher 0.00001.

(c) In the event that a Swap Rate in the relevant currency, and for the relevant period, appearing on the Rate Source Page specified by the Exchange in the Table in respect of Swap Rates used for the purposes of calculating the Reference Rates is expressed other than on the relevant interest rate basis specified by the Exchange in the Table, then such interest rate shall be adjusted to be on such basis for the purposes of determining the Net Present Value.

(d) The Exchange may at its discretion resolve, prior to the commencement of the calendar month in which the Last Trading Day falls, that the Reference Rates shall be determined by means other than that specified in Rule ZZZZ.6(a) or ZZZZ.6(b). Any such determination by the Exchange shall be the subject of a notice posted on the Market.

(e) The Net Present Value (“NPV”) shall be a figure calculated in accordance with the formula:

$$NPV = 100 \times \left(d_m + F \sum_{r=1}^m A_r d_r \right)$$

where, in respect of a Contract for a particular delivery month, and the Set of Relevant Payments to which it relates:

- F = the Notional Fixed Rate expressed in such a way that, for a Notional Fixed Rate of 3%, F = 0.03;
- m = the number of Cashflow Payment Date Reference Periods from the Effective Date to the Termination Date where 'm' is an integer;
- A_r = the Relevant Day Count Fraction for the Cashflow Calculation Period applicable to the rth Cashflow Payment Date where 'r' is an integer;
- d_r = the Discount Factor for the Cashflow Calculation Period applicable to the rth Cashflow Payment Date, where 'r' is an integer. The Discount Factor d_r shall be established as follows:

The Discount Factor for the Cashflow Calculation Period applicable to the first Cashflow Payment Date d₁ is defined with respect to: (i) the Reference Rate, denoted as 'C₁', applicable to the first Cashflow Payment Date (expressed in such a way that for a Reference Rate of 5%, C₁ = 0.05); and (ii) the Relevant Day Count Fraction for the first Cashflow Calculation Period, denoted as 'A₁' as

$$d_1 = \frac{1}{1 + A_1 C_1}$$

rounded to eight decimal places. Where the Discount Factor is not an exact multiple of 0.00000001, it will be rounded to the nearest 0.00000001 or, where the Discount Factor is an exact uneven multiple of 0.000000005, to the nearest higher 0.00000001.

The Discount Factor for each subsequent Cashflow Calculation Period shall be calculated as follows:

$$d_r = \frac{1 - C_r \sum_{i=1}^{r-1} A_i d_i}{1 + A_r C_r}$$

rounded to eight decimal places. Where the Discount Factor is not an exact multiple of 0.00000001, it will be rounded to the nearest 0.00000001 or, where the Discount Factor is an exact uneven multiple of 0.000000005, to the nearest higher 0.00000001.

In relation to the calculation set out above,

- C_r = the Reference Rate applicable to the rth Cashflow Payment Date (expressed in such a way that for a Reference Rate of 5%, C_r = 0.05);
- A_i = the Relevant Day Count Fraction for the Cashflow Calculation Period applicable to the ith Cashflow Payment Date;
- d_i = the Discount Factor as calculated in accordance with the above formulae, for the Cashflow Calculation Period applicable to the ith Cashflow Payment Date;
- (f) (i) In respect of Contracts for which the minimum price movement specified by the Exchange in the Table is 0.02 Price Points, the EDSP shall be the figure calculated by rounding the Net Present Value to two decimal places. Where the Net Present Value is not an exact multiple of 0.01, it will be rounded to the nearest 0.01 or, where the Net Present Value is an exact uneven multiple of 0.005, to the nearest higher 0.01.
- (ii) In respect of Contracts for which the minimum price movement specified by the Exchange in the Table is 0.01 Price Points, the EDSP shall be expressed on the same basis as the contract price and shall be the figure calculated by rounding the Net Present Value to two decimal places. Where

the Net Present Value is not an exact multiple of 0.01, it will be rounded to the nearest 0.01 or, where the Net Present Value is an exact uneven multiple of 0.005, to the nearest higher 0.01.

- (iii) In respect of Contracts for which the minimum price movement specified by the Exchange in the Table is 0.005 Price Points, the EDSP shall be expressed on the same basis as the contract price and shall be the figure calculated by rounding the Net Present Value to three decimal places. Where the Net Present Value is not an exact multiple of 0.005, it will be rounded to the nearest 0.005 or, where the Net Present Value is an exact uneven multiple of 0.0025, to the nearest higher 0.005.

(g) If a Rate Source Page specified by the Exchange in the Table is not available for any reason whatsoever or the relevant Reference Rates referred to in Rule ZZZZ.6(a) have not been published by the time referred to in such Contract Rule or the Minimum Rate Criteria are not met, Exchange officials shall in their absolute discretion determine the relevant Reference Rates by such means other than that specified in Rule ZZZZ.6(a).

(h) If, in the opinion of Exchange officials, the EDSP which would result from a calculation made in accordance with Rule ZZZZ.6(e) and Rule ZZZZ.6(e) would not be consistent with the prevailing Swap Rates in the relevant currency and for the relevant period (as determined by Exchange officials) at the time referred to in Rule ZZZZ.5(a), then Exchange officials may in their absolute discretion set the EDSP at a price determined by them by reference to such prevailing Swap Rates.

(i) The Exchange shall publish a provisional EDSP and the final EDSP at such times as are specified in the Administrative Procedures. The final EDSP shall be final and binding for all purposes.

ZZZZ.7 PAYMENT

(a) In respect of each lot comprised in a Contract the following payments shall be made in the Currency of Contract by the time on the Settlement Day specified by the Exchange in the Administrative Procedures:

- (i) where the EDSP exceeds the Contract price, payment by the Seller to the Clearing House or payment by the Clearing House to the Buyer, or both (as the case may require); and
- (ii) where the Contract price exceeds the EDSP, payment by the Buyer to the Clearing House or payment by the Clearing House to the Seller, or both (as the case may require),

of an amount calculated by multiplying the difference in Price Points between the EDSP and the Contract price by the value per lot of one Price Point as specified in Rule ZZZZ.4(b).

ZZZZ.8 DEFAULT IN PERFORMANCE

(a) A Buyer or Seller other than the Clearing House shall be in default where:

- (i) he fails to fulfil in accordance with these Contract Rules, the Regulations and the Administrative Procedures and the Clearing House Rules his obligations under a Contract by the time and in the manner prescribed; or
- (ii) he fails to pay any sum due to the Clearing House in respect of a registered Contract by the time specified in these Contract Rules or in the Administrative Procedures or under the Clearing House Rules; or
- (iii) in the reasonable opinion of the Exchange or the Clearing House he is otherwise in default.

(b) Subject to the default rules of the Clearing House, in the event of a default by a Buyer or a Seller in respect of a registered Contract, the Exchange shall, at the request of the Clearing House, forthwith fix a price for invoicing back and each lot in issue shall be invoiced back at that price. No dispute as to such price may be referred to arbitration. Such price

may at the Exchange's absolute discretion take account of any compensation that the Exchange may consider should be paid by or to the Buyer or Seller, as applicable.

(c) [Not used]

ZZZZ.9 FORCE MAJEURE

(a) Subject to any steps taken at any time by the Exchange under emergency powers in the Regulations and subject to the default rules of the Clearing House, a Seller or a Buyer shall be liable to perform his obligations in respect of a lot comprised in a Contract by the due time, notwithstanding that he may be or is likely to be prevented from so doing by any event beyond his reasonable control including without limitation, any act of God, strike, lockout, war, armed conflict, use of force by authority of the United Nations, fire, riot or civil commotion, combination of workmen, act of terrorism, breakdown of machinery, unavailability or restriction of computer or data processing facilities or energy supplies or bank transfer systems.

ZZZZ.10 [NOT USED]

ZZZZ.11 [NOT USED]

ZZZZ.12 [NOT USED]

ZZZZ.13 STATEMENT IN RELATION TO EDSP FORMATION PROCESS⁴

(a) Potential users of the ICE Futures SOFR Swapnote Futures Contracts (the "Contracts") made available on ICE Futures Europe should familiarise themselves with the relevant Contract Rules as well as the relevant EDSP calculation process. The EDSP calculations for the Contracts utilise ICE Swap Rate SOFR Swap Rates administered by ICE Benchmark Administration Limited, and may include Reference Rates calculated using the Swapnote Swap Rate Interpolation Methodology.

ICE Swap Rate is a trade mark of ICE Benchmark Administration Limited ("IBA"), and is used by ICE Futures Europe with permission under licence by IBA.⁵

Potential users should, therefore, consider the risks of holding positions into the expiry of the Contract. In particular, they should: (i) familiarise themselves with the daily fixing process for SOFR Swap Rates; (ii) familiarise themselves with the Swapnote Swap Rate Interpolation Methodology; and (iii) consider their exposure to potentially unfavourable price movements in the expiry and whether to take steps to neutralise such exposure; for example, taking into account that there may be relatively limited liquidity provision, whether to "roll" or close positions prior to expiry.

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⁴ Amended 12 May 2015, 27 March 2023

⁵ Inserted 20 September 2021

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⁶ Inserted 20 September 2021

TABLE
CONTRACT DETAILS SPECIFIED BY THE EXCHANGE FOR ICE FUTURES SOFR SWAPNOTE FUTURES CONTRACTS

Contract	Two Year SOFR Swapnote	Five Year SOFR Swapnote	Ten Year SOFR Swapnote	Thirty Year SOFR Swapnote
Set of Relevant Payments	2 Year SOFR	5 Year SOFR	10 Year SOFR	30 Year SOFR
Effective Date	Third Wednesday of delivery month	Third Wednesday of delivery month	Third Wednesday of delivery month	Third Wednesday of delivery month
Currency of the Contract	U.S. Dollar	U.S. Dollar	U.S. Dollar	U.S. Dollar
Termination Date	Second anniversary of the Effective Date	Fifth anniversary of the Effective Date	Tenth anniversary of the Effective Date	Thirtieth anniversary of the Effective Date
Cashflow Payment Date Reference Period	One Calendar Year	One Calendar Year	One Calendar Year	One Calendar Year
Unit of trading	\$200,000	\$100,000	\$100,000	\$100,000
Notional Fixed Rate	3.00%	3.00%	3.00%	3.00%
Delivery months	Mar, Jun, Sep, Dec	Mar, Jun, Sep, Dec	Mar, Jun, Sep, Dec	Mar, Jun, Sep, Dec
No. of delivery months available for trading⁷	2 Quarterly	2 Quarterly	2 Quarterly	2 Quarterly
Quotation	Price Points per \$100 nominal	Price Points per \$100 nominal	Price Points per \$100 nominal	Price Points per \$100 nominal
Value of One Price Point	\$2,000 per lot	\$1,000 per lot	\$1,000 per lot	\$1,000 per lot
Minimum price movement(Value)	0.005 Price Points (\$10)	0.01 Price Points (\$10)	0.02 Price Points (\$20)	0.02 Price Points (\$20)
Last Trading Day⁸	Two Business Days before the Effective Date	Two Business Days before the Effective Date	Two Business Days before the Effective Date	Two Business Days before the Effective Date

⁷ The delivery months available for trading will be the relevant number of nearest quarterly delivery months. A new delivery month will be made available for trading on the business day following the Last Trading Day of the current delivery month.

⁸ If such a day is not a business day, "Last Trading Day" shall mean the business day following such day.

**CONTRACT RULES: ICE FUTURES SOFR SWAPNOTE
FUTURES CONTRACTS**

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Last Trading Time (New York time)	11:00 AM	11:00 AM	11:00 AM	11:00 AM
Relevant Floating Rate	SOFR	SOFR	SOFR	SOFR
Rate Source Page (New York time)	ICE Benchmark Administration ICE Swap Rate: USD SOFR 1100 Rates	ICE Benchmark Administration ICE Swap Rate: USD SOFR 1100 Rates	ICE Benchmark Administration ICE Swap Rate: USD SOFR 1100 Rates	ICE Benchmark Administration ICE Swap Rate: USD SOFR 1100 Rates
Interest Rate Basis	Actual/360	Actual/360	Actual/360	Actual/360

SCHEDULE
SWAPNOTE SWAP RATE INTERPOLATION METHODOLOGY FOR ICE FUTURES SOFR SWAPNOTE
FUTURES CONTRACTS

1. Swapnote Swap Rate Interpolation Methodology

Provided that the Minimum Rate Criteria, as described in the Contract Rules, are met then:

For each Cashflow Payment Date x for which there is a corresponding Rate Source Page Date x_i , the Swap Rate y is defined as the Swap Rate y_i available on the Rate Source Page.

For each Cashflow Payment Date x for which there is not a corresponding Rate Source Page Date x_i , the relevant Reference Rate y is found via Cubic Spline interpolation.

2. Glossary⁹

n	is an integer defined as the number of Rate Source Page Dates;
x	is a date defined as a Cashflow Payment Date;
x_i	means the i th date from the Rate Source Page Dates;
y	is a Reference Rate relating to a date x ;
y_i	means a Swap Rate and is the corresponding Swap Rate for each value of x_i ;
y''	means the second derivative of the function y ;
y_i''	is the value of the second derivative of y for $y = y_i$; and
M	is a Matrix.

3. Cubic Spline Interpolation¹⁰

The dates x_1, x_2, \dots, x_n shall be those available on the Rate Source Page, and hence y_1, y_2, \dots, y_n are the corresponding Swap Rates available on the Rate Source Page.

The Reference Rate y for a date x that is: (i) not available on the Rate Source Page; and (ii) satisfies the inequality $x_i < x < x_{i+1}$, where $1 \leq i \leq n - 1$ shall be determined as follows:

$$y = a(x - x_i)^3 + b(x - x_i)^2 + c(x - x_i) + d$$

Where:

$$a = \frac{(y_{i+1}'' - y_i'')}{6(x_{i+1} - x_i)}$$

$$b = \frac{y_i''}{2}$$

$$c = \frac{(y_{i+1} - y_i)}{(x_{i+1} - x_i)} - \frac{(y_{i+1}''(x_{i+1} - x_i))}{6} - \frac{(y_i''(x_{i+1} - x_i))}{3}$$

$$d = y_i$$

⁹ Amended 12 May 2015

¹⁰ Amended 12 May 2015

**CONTRACT RULES: ICE FUTURES SOFR SWAPNOTE
FUTURES CONTRACTS**



And y_i'' shall be determined as follows:

$$\begin{pmatrix}
 1 & 0 & 0 & 0 & \dots & 0 & 0 & 0 & 0 & 0 \\
 (x_2 - x_1) & 2(x_2 - x_1) + 2(x_3 - x_2) & (x_3 - x_2) & 0 & \dots & 0 & 0 & 0 & 0 & 0 \\
 0 & (x_3 - x_2) & 2(x_3 - x_2) + 2(x_4 - x_3) & (x_4 - x_3) & \dots & 0 & 0 & 0 & 0 & 0 \\
 \vdots & \vdots & \vdots & \vdots & \ddots & \vdots & \vdots & \vdots & \vdots & \vdots \\
 0 & 0 & 0 & 0 & \dots & (x_{n-2} - x_{n-3}) & 2(x_{n-2} - x_{n-3}) + 2(x_{n-1} - x_{n-2}) & (x_{n-1} - x_{n-2}) & 0 & 0 \\
 0 & 0 & 0 & 0 & \dots & 0 & (x_{n-1} - x_{n-2}) & 2(x_{n-1} - x_{n-2}) + 2(x_n - x_{n-1}) & (x_n - x_{n-1}) & 0 \\
 0 & 0 & 0 & 0 & \dots & 0 & 0 & 0 & 1 & 1
 \end{pmatrix}
 = M$$

$$M \begin{pmatrix} y_1'' \\ y_2'' \\ y_3'' \\ \vdots \\ y_{n-2}'' \\ y_{n-1}'' \\ y_n'' \end{pmatrix} = 6 \begin{pmatrix} 0 \\ \frac{(y_3 - y_2)}{(x_3 - x_2)} - \frac{(y_2 - y_1)}{(x_2 - x_1)} \\ \frac{(y_4 - y_3)}{(x_4 - x_3)} - \frac{(y_3 - y_2)}{(x_3 - x_2)} \\ \vdots \\ \frac{(y_{n-1} - y_{n-2})}{(x_{n-1} - x_{n-2})} - \frac{(y_{n-2} - y_{n-3})}{(x_{n-2} - x_{n-3})} \\ \frac{(y_n - y_{n-1})}{(x_n - x_{n-1})} - \frac{(y_{n-1} - y_{n-2})}{(x_{n-1} - x_{n-2})} \\ 0 \end{pmatrix}$$



