



Nasdaq Calypso

Setting up Freight Commodities

Version 18

Revision 1.0

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Approved

1. Setting up Freight Commodities

Freight derivatives serve as a means of hedging exposure to freight market risk by providing for the purchase and sale of a freight rate (the "contract rate") along a named voyage route (the "contract route") over a specified period of time (the "contract period"). Contracts are cash settled, there is no physical delivery.

Calypso supports two types of freight products, those traded in Worldscale and Time Charter, traded in USD/Tonne. The setup of both types is described below.

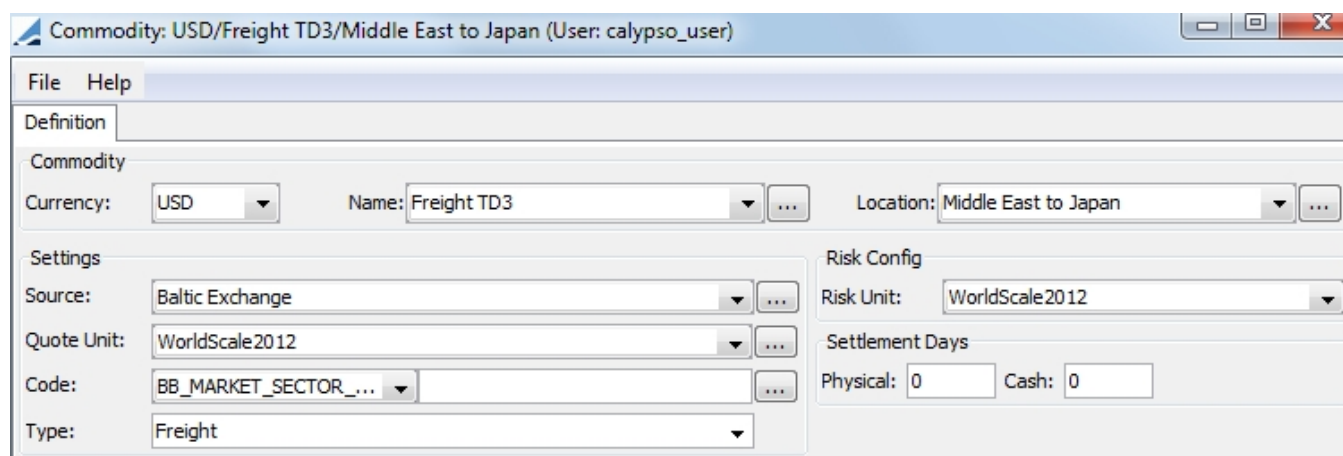
1.1 Worldscale Freight Setup

Worldscale is a unified system of establishing payment of a freight rate for a given oil tanker's cargo. In negotiating a price to pay, the quotation is referred to as WS100 or 100% of Worldscale.

Freight derivatives, such as Futures and Forward Freight Agreements (FFAs), can be written using WS as a component of the pricing. For example, an FFA could be agreed between two counterparties where one pays a fixed WS rate and settles against a floating WS rate that is observed in the market over a specified time period.

Detailed below is how to configure Worldscale Freight derivatives.

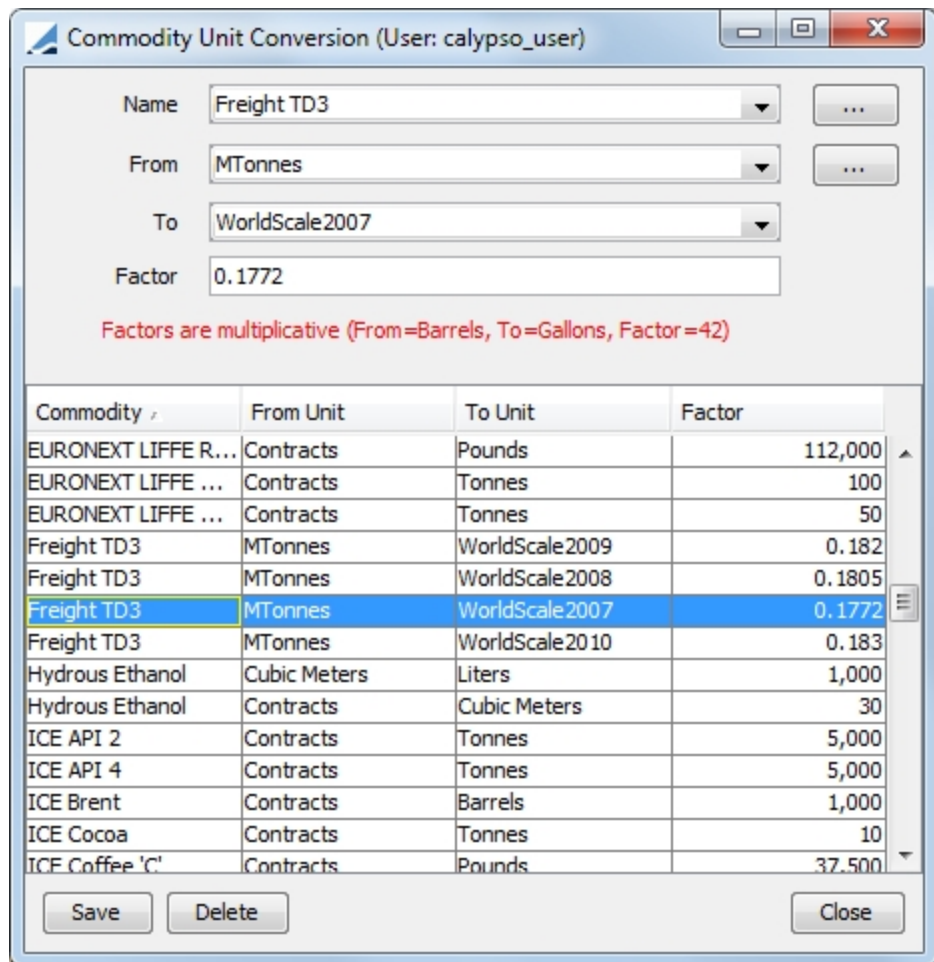
Step 1 - Commodity Configuration



- » The Commodity Name should be the freight route name.
- » The Location is the source to destination point. Locations can be added using the *CommodityLocation* domain value.
- » The quote and risk unit should be a worldscale quote. (Quotes are created in the [Commodity Quote Creator](#).)
- » To add the source that publishes the freight rate indices, use the *CommoditySource* domain value.
- » Select Freight as the commodity Type.
- » If your Quote and Risk Units are in MTonnes, do not select Freight as Type.

Step 2 - Freight Unit Conversion

In the Commodity Unit Conversion window, you are able to capture the annual Worldscale rates for use in pricing. To view this window from Calypso Navigator, select **Configuration > Commodities > Commodity Conversion**.



Commodity	From Unit	To Unit	Factor
EURONEXT LIFFE R...	Contracts	Pounds	112,000
EURONEXT LIFFE ...	Contracts	Tonnes	100
EURONEXT LIFFE ...	Contracts	Tonnes	50
Freight TD3	MTonnes	WorldScale2009	0.182
Freight TD3	MTonnes	WorldScale2008	0.1805
Freight TD3	MTonnes	WorldScale2007	0.1772
Freight TD3	MTonnes	WorldScale2010	0.183
Hydrous Ethanol	Cubic Meters	Liters	1,000
Hydrous Ethanol	Contracts	Cubic Meters	30
ICE API 2	Contracts	Tonnes	5,000
ICE API 4	Contracts	Tonnes	5,000
ICE Brent	Contracts	Barrels	1,000
ICE Cocoa	Contracts	Tonnes	10
ICE Coffee 'C'	Contracts	Pounds	37,500

- » The Name for the unit conversion needs to contain the route designation.
- » You may add entries to the To (source) field in the *CommoditySource* domain value.
- » The Worldscale rate contains the year from which it was set.
- » Enter the appropriate factor for that route during that year. For example, the rate for TD3 route in 2010 is 18.30, therefore the factor is .1830.

Step 3 - Freight Future Contract Setup

To set up a Freight Future contract, you may need to add the desired exchange and date rule for the exchange. To add an exchange, from Calypso Navigator, select **Configuration > Legal Data > Entities**. Your desired exchange should be designated as a MarketPlace.

Legal Entity- Version - 1 [120100/LAPTOP_RELEASE/calypso_user] (User: calypso_user)

Utilities Help

Short Name: IMAREX Status: Enabled

Full Name: International Maritime Exchange Role(s): MarketPlace

Parent: ...

Country: NORWAY ...

Inactive As From: User: calypso_user

Entered Date: 03/13/2012 5:35:32 PM

External Ref: ...

Holidays: ...

Disabled Role(s):

☒ Financial ☐ Non Financial

☐ Triparty Substitutions

Attributes Legal Agreement Contact Rating SDI's Netting Methods

Custom Registration Relation Tolerance Account

Ref Ob LE Id: 45696 ☐ Authorization Show Auth.

Load... New Delete Save Save As... Update Short Name Close

To set up a date rule for the exchange, if necessary, from Calypso Navigator, select **Configuration > Definitions > Date Schedule Definitions**.

Date Rules (User: calypso_user)

NameIMAREX Monthly LTD

Day20

Add Days0

MonthJAN

Select All

UnSelect All

☒ Jan

☒ Feb

☒ Mar

☒ Apr

☒ May

☒ Jun

☒ Jul

☒ Aug

☒ Sep

☒ Oct

☒ Nov

☒ Dec

Add Relative Months0

Relative Type:
Relative

TypeDAY_FIXED

WeekDayNONE

RankNONE

Date RollFOLLOWING

☒ Bus

☐ Cal

☐ Bus Days

HolidaysLON

☒ Check Holiday

Relative

Description

From Date

Generate

To Date

Next & Previous

Id	Name	Type	Day	Rank
26834	ICE_ECX_LTD	CUSTOM	0	
45697	IMAREX Monthly LTD	DAY_FIXED	20	
15935	KCBOT Wheat Last Trading Day	DAY_FIXED	15	
16295	LIFFE Two business days prior to the TFE Last Trading Day	RELATIVE	0	
8367	LME Base Metals	RULE_SEQUENCE	0	
8366	LME Third Wednesday	IMM	0	
28958	MEFF ETO Expiration Day	IMM	0	

Load

New

Delete

Save

Save As New

Help

Close

Below is a sample future freight contract.

Future Contract Specification Window (User: calypso_user)

File Futures Help

Contract 03_Monthly/IMAREX/USD/Commodity New

Name	Value
Contract Summary	
Exchange	IMAREX
Currency	USD
Name	TD3_Monthly
Type	Commodity

Details **Underlying**

Name	Value
General	
Quote Type	WS
Quote Decimals	2
Is Contract Size Variable	<input type="checkbox"/>
Contract Size	1,000.000000
No. of Futures in Contract	24
Settle Type	Cash
Negative Price Liquidation	<input type="checkbox"/>
Attributes	Select...
Fungible with	
Future Name Month	First Delivery Date
Last CCP Date Lag	0
Ticks	
Tick Type	Fixed
Tick Size	4
Minimum move (ticks)	0.250000
Tick Value	250
Dates/Time	

Delete Contract Save Contract Save Contract As New

Select Quote Type WS
for worldscale
underlyings.

Step 4 - Freight Commodity Reset

The currency and quote unit from the underlying commodity will be the same on the commodity reset. The world scale Quote Type should be WS.

Commodity Reset - BITR Spot TD3 (User: calypso_user)

Name: BITR Spot TD3 Id: 47196

Reset Type: Commodity

Commodity: USD/Freight TD3/Middle East to Japan

Currency: USD Time: 12 H 30 M

Quote Unit: WorldScale2012 Time Zone: America/New_York

Quote Type: WS

Future Contract: TD3_Monthly/IMAREX/USD

Forward Price: Nearby: Price is taken from the first pillar date equal to or greater than the FixDate.

Fixing Holiday: NYC

Fwd Price Holiday:

Code: REFERENCE_PRICE

Details:

New Refresh Delete Save

Q

Name	Id	Reset Type	Underlying	Currency	Quote Unit	Reset Hour	Tim
TOCOM_Gol...	15,952	Commodity	JPY/TOCOM...	JPY	Grams	1,100	Asia ^
TOCOM_Ker...	15,954	Commodity	JPY/TOCOM...	JPY	Kiloliters	1,100	Asia
TOCOM_min...	16,025	Commodity	JPY/TOCOM...	JPY	Grams	900	Asia
BITR Spot TD3	47,196	Commodity	USD/Freight...	USD	WorldScale2...	1,230	Ame

Show Pending ...

☐ Authorization

Help

Close

Freight Market Data

There are various market data configurations to accommodate the Freight commodity type. These are summarized below.

Annual Quote

The annual quote is published by the Worldscale Association once per year and is quoted in USD/MTonnes. Rates for the following year are fixed in Q4, therefore it is possible for a route during that period to have two quotes. For this reason, the quote year is embedded in the quote to differentiate.

Establishing the quotes for each year is done using the [Quote Creator](#).

Curve Underlying

The forward curves are defined with Future underliers which can be quoted in USD/MTonnes or WS.

Refer to [Freight Future Contract Setup](#) for details on creating a freight future.

Forward Curve

There is no unit conversion supported for freight curves because the underlying commodity is of type Freight. WS quotes are like percentages, which require a fixed rate for each year, by which to multiply the percentage.

Freight Forward curves are most commonly quoted in the reference unit of the route being priced. Therefore, routes quoted in WS will have forward curves in WS and those quoted in USD/MTonnes will have forward curves in USD/MTonnes. There is no unit conversion between WS and USD/MTonnes in the curve generator itself.

For detailed information on setting up a forward curve, refer to Commodity Curve in the Market Data User Guide.

Forward Curve Generation

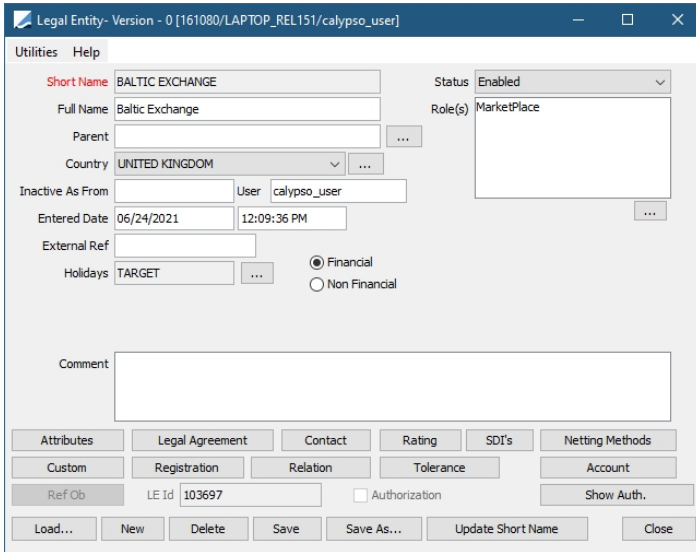
The output of the forward curve follows the unit of the underliers. Underliers in USD/MTonnes have output in USD/MTonnes. Underliers in WS will have their numbers converted to USD/Mtonnes through the swap and future pricers by multiplying the factor from the curve by the annual worldscale rate/100.

For worldscale output, only the Commodity generator can be used and only future underliers with WS quotes are permitted.

1.2 Time Charter Freight Setup

Step 1 - Market Place Setup

Create a Baltic Exchange Market Place in the Legal Entity window. ([Configuration > Legal Data > Entities](#))



Legal Entity - Version - 0 [161080/LAPTOP_REL151/calypso_user]

Utilities Help

Short Name: BALTIC EXCHANGE Status: Enabled

Full Name: Baltic Exchange Role(s): Marketplace

Parent: ...

Country: UNITED KINGDOM

Inactive As From: User: calypso_user

Entered Date: 06/24/2021 12:09:36 PM

External Ref: ...

Holidays: TARGET ☒ Financial ☐ Non Financial

Comment:

Attributes Legal Agreement Contact Rating SDI's Netting Methods

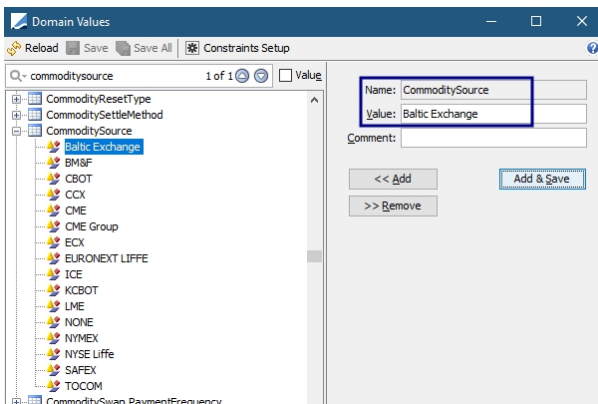
Custom Registration Relation Tolerance Account

Ref Ob: LE Id: 103697 Authorization Show Auth.

Load... New Delete Save Save As... Update Short Name Close

Step 2 - Add source in Commodity

Add the value *Baltic Exchange* to the *CommoditySource* domain. ([Configuration > System > Domain Values](#))



Domain Values

Reload Save Save All Constraints Setup

commoditysource 1 of 1 Value

Name: CommoditySource

Value: Baltic Exchange

Comment:

<< Add Add & Save

>> Remove

CommodityResetType

CommoditySettleMethod

CommoditySource

Baltic Exchange

BMSF

CBOT

CCX

CME

CME Group

ECX

EURONEXT LIFFE

ICE

KCBOT

LME

NONE

NYMEX

NYSE Liffe

SAFEX

TOCOM

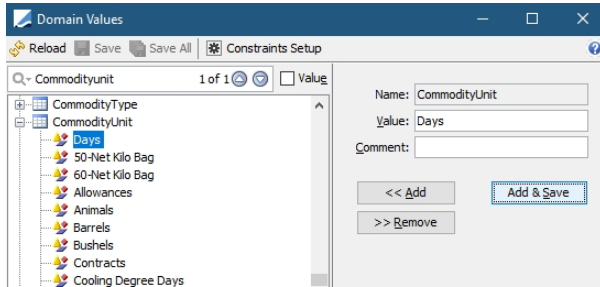
CommoditySwap.PaymentFrequency

The value can also be added directly in the Commodity window by clicking on the ... next to the Source field.

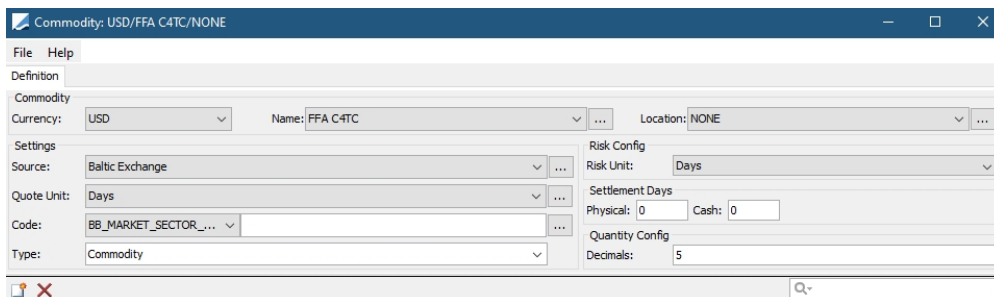
Step 3 - Create commodity FFA C4TC

Add the value *Days* to the *CommodityUnit* domain. ([Configuration > System > Domain Values](#))

The value can also be added directly in the Commodity window by clicking on the ... next to the Unit field.



Create a new Commodity for USD/FFA C4TC/NONE. ([Configuration > Commodities > Commodities](#))



Step 4 - Commodity Reset Rule

Add a new Commodity Reset Rule name by clicking  next to the Name field. Then create the Reset Rule.

Commodity Reset - FFA_C4TC

Click here to add FFA_C4TC as a Commodity Reset Rule.

Name: FFA_C4TC

Id: 103698

Reset Type: Commodity

Commodity: USD/FFA C4TC/NONE

Currency: USD

Time: 12 H 30 M

Quote Unit: Days

Time Zone: GMT

Quote Type: Price

Future Contract:

Forward Price: InterpolatedPrice: Price on curve date equal to the FixDate, using the Interpolator defined in the curve.

Fixing Holiday: LON

Fwd Price Holiday:

Code: REFERENCE_PRICE

Details:

New Refresh Delete Save

Q

Name	Id	Reset Type	Underlying	Currency	Quote Unit	Reset Hour	Time Zone	Q
CBOT_Corn...	83,197	Commodity	USD/CBOT ...	USD	Bushels	1,230	America/Los...	Pri
NYMEX_WTI...	83,697	Commodity	USD/NYMEX ...	USD	Barrels	1,230	America/Los...	Pri
FFA_C4TC	103,698	Commodity	USD/FFA C4...	USD	Days	1,230	GMT	Pri

Show Pending ...

Authorization

Help

Close

Step 5 - Create Commodity Forward Points

Create the curve underlying for FFA_C4TC. ([Configuration > Market Data > Curve Underlyings](#))

Curve Underlying Window

Fixed Coupon CDS
Cash
Future
Future Commodity

CDS Index
Bond Future
Commodity Fwd Points

FX Fwd Tenor
FRA
Listed FRA
Commodity Spot

FX Fwd Fixed
Spread
Commodity Forward

FX Fwd Month End
Swap
Commodity Swap

Equity Index
Turn Rate
Commodity Swap

ETO
Basis Swap
Basis Two Swap

Future Equity Index
Bond
Generic CDS
CDS

Inflation Spread
CDS
FX Future

Name: FFA_C4TC

Commodity: USD/FFA C4TC/NONE

Fwd Point Dates: FFA Dry Monthly LTD

Pillar Dates: FFA Dry Monthly LTD

Date Format: ☐ Daily ☒ Monthly

Contract Size: 30

Currency: USD

Unit: Days

Number of Fwd Points: 24

As Of Date: 06/24/2021

Clear Show

FFA_C4TC.JUL.21
FFA_C4TC.AUG.21
FFA_C4TC.SEP.21
FFA_C4TC.OCT.21
FFA_C4TC.NOV.21

Id	Name	Commodity	Date Format	Currency	Unit	Contract Size	Quote Name
104199	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.JUL.21
104200	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.AUG.21
104201	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.SEP.21
104202	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.OCT.21
104203	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.NOV.21
104204	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.DEC.21
104205	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.JAN.22
104206	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.FEB.22
104207	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.MAR.22
104208	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.APR.22
104209	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.MAY.22
104210	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.JUN.22
104211	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.JUL.22
104212	FFA_C4TC	FFA C4TC	Monthly	USD	Days	30	FFA_C4TC.AUG.22

Load New Delete Save Save as New Id 104198

Currency: USD Help Close

If needed, define a date rule for the curve underlying in the Date Rules window. ([Configuration > Date Schedule Definition > Date Rules](#))

► For information regarding curve underlyings, refer to Market Data Curve Commodity documentation.

Step 6 - Create a Commodity Forward Curve

Create a commodity forward curve using the curve underlying that was just created. ([Market Data > Commodity Curves > Forward Curve](#))

Definition

Curve (14631) FFA C4TC USD CLOSE FFA C4TC 1M 6/24/21 6:10:09 PM User(calypso_user)(PE OFFICIAL)

Curve Utilities Help

Name: FFA C4TC | CLOSE | Date: 06/24/2021 | 6:10:09 PM | ☒ Current

Definition Underlying Quotes Points Graph Display Config

Commodity: USD/FFA C4TC/NONE

Value Type: Price | Currency: USD | Unit: Days

Interpolator: InterpolatorLinear | Generation Alg.: Commodity

☒ Generate from instruments

Curve Type: CurveCommodity | Pricing Env: OFFICIAL | Holidays: LON

Name	Value
Fill Missing Quotes	<input checked="" type="checkbox"/>
2nd Interpolator Cutoff	
2nd Interpolator	
Short-end extrapolation	

Comment:

Load ... New Delete ... Save Save As ... Close

Click here to select the commodity defined in Step 3.

Underlying

Choose at least 3 near month, 3 quarterly and 1 yearly point.

Curve (14631) FFA C4TC USD CLOSE FFA C4TC 1M 6/24/21 6:10:09 PM User(calypso_user)(PE OFFICIAL)

Curve Utilities Help

Name: FFA C4TC | CLOSE | Date: 06/24/2021 | 6:10:09 PM | ☒ Current

Definition Underlying Quotes Points Graph Display Config

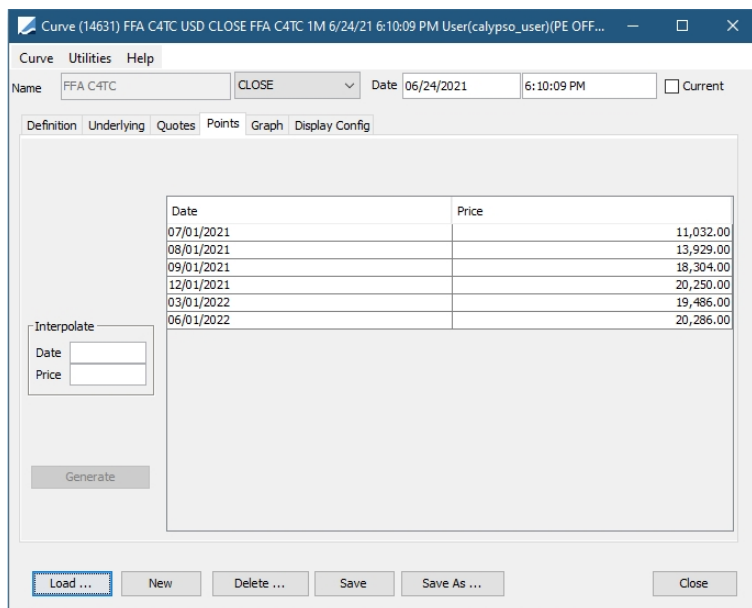
Instrument type: CommodityFwdPoint | ☐ All | New/Edit Underlying... | Underlying Instruments

Include Exclude

Id	Type	Description	Included	Priority
104199	CommodityFwdPoint	FFA_C4TC.JUL.21	<input checked="" type="checkbox"/>	0
104200	CommodityFwdPoint	FFA_C4TC.AUG.21	<input checked="" type="checkbox"/>	0
104201	CommodityFwdPoint	FFA_C4TC.SEP.21	<input checked="" type="checkbox"/>	0
104202	CommodityFwdPoint	FFA_C4TC.OCT.21	<input type="checkbox"/>	0
104203	CommodityFwdPoint	FFA_C4TC.NOV.21	<input type="checkbox"/>	0
104204	CommodityFwdPoint	FFA_C4TC.DEC.21	<input checked="" type="checkbox"/>	0
104205	CommodityFwdPoint	FFA_C4TC.JAN.22	<input type="checkbox"/>	0
104206	CommodityFwdPoint	FFA_C4TC.FEB.22	<input type="checkbox"/>	0
104207	CommodityFwdPoint	FFA_C4TC.MAR.22	<input checked="" type="checkbox"/>	0
104208	CommodityFwdPoint	FFA_C4TC.APR.22	<input type="checkbox"/>	0
104209	CommodityFwdPoint	FFA_C4TC.MAY.22	<input type="checkbox"/>	0
104210	CommodityFwdPoint	FFA_C4TC.JUN.22	<input checked="" type="checkbox"/>	0
104211	CommodityFwdPoint	FFA_C4TC.JUL.22	<input type="checkbox"/>	0
104212	CommodityFwdPoint	FFA_C4TC.AUG.22	<input type="checkbox"/>	0
104213	CommodityFwdPoint	FFA_C4TC.SEP.22	<input type="checkbox"/>	0
104214	CommodityFwdPoint	FFA_C4TC.OCT.22	<input type="checkbox"/>	0
104215	CommodityFwdPoint	FFA_C4TC.NOV.22	<input type="checkbox"/>	0

Load ... New Delete ... Save Save As ... Close

Points

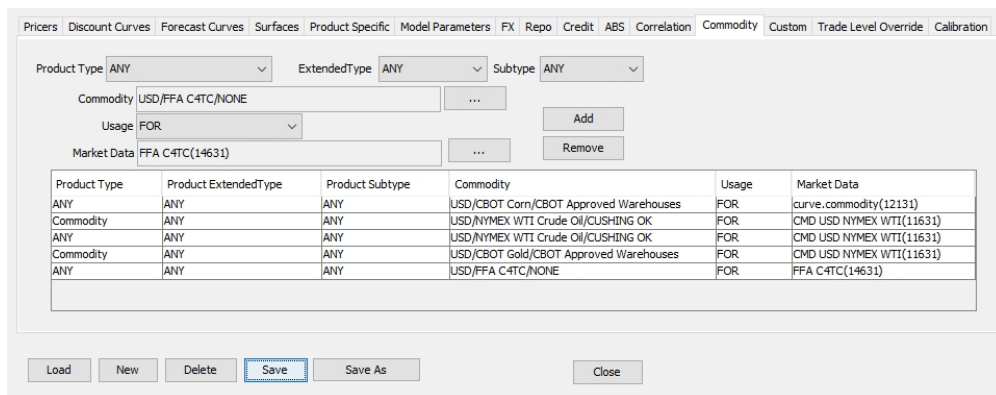


Date	Price
07/01/2021	11,032.00
08/01/2021	13,929.00
09/01/2021	18,304.00
12/01/2021	20,250.00
03/01/2022	19,486.00
06/01/2022	20,286.00

► For information regarding commodity curve definition, refer to Market Data Curve Commodity documentation.

Step 7 - Register FFA C4TC Forward Curve in Pricing Environment.

Register the curve in the Pricing Configuration. ([Market Data > Pricing Environment > Pricer Configuration](#))



Product Type	Product ExtendedType	Product Subtype	Commodity	Usage	Market Data
ANY	ANY	ANY	USD/CBOT Corn/CBOT Approved Warehouses	FOR	curve.commodity(12131)
Commodity	ANY	ANY	USD/NYMEX WTI Crude Oil/CUSHING OK	FOR	CMD USD NYMEX WTI(11631)
ANY	ANY	ANY	USD/NYMEX WTI Crude Oil/CUSHING OK	FOR	CMD USD NYMEX WTI(11631)
Commodity	ANY	ANY	USD/CBOT Gold/CBOT Approved Warehouses	FOR	CMD USD NYMEX WTI(11631)
ANY	ANY	ANY	USD/FFA C4TC/NONE	FOR	FFA C4TC(14631)

1.2.1 Commodity Swap Trade Example

When creating a Commodity Swap trade, when the reset rule FFA C4TC is chosen, the corresponding forward curve is automatically selected.

CommoditySwap2/30/09/2022/P:USD 18700.0 /R:USD/FFA C4TC/NONE -PO is PHILIPPINE V...

Trade Back Office CommoditySwap2 Cashflows Analytics Pricing Env Market Data View Utilities Help

Trade Details Fees Cashflows CSA History Inv Attributes

Cpty CounterParty ID 192431
 Book Status PRICING
 Broker Template NONE

Swap Type Buy (Pay Fixed) Pmt Ccy USD

Swap Leg

Rec Float
 Commodity Reset FFA_C4TC
 Reference C... USD
 Fwd Price M... InterpolatedPrice
 Fixing Calendar LON
 Spread 0 Factor 1

Swap Leg

Pay Fixed
 Strike Ccy
 Strike 18,700
 Buy/Sell Units Days
 Par Strike

Date Schedule

Pay Freq. Periodic
 Fixing Policy Whole Period
 Start Date 01/09/2022
 End Date 30/09/2022
 Frequency MTH

Quantity Schedule

Quantity 30.00000
 Quote Unit Days
 Per Period MTH
 Total Qty 30
 After Conv Dont Round

FX Conversion

FX Reset Rate Fixed ☐
 Avg Method Standard
 Rounding After Average
 FX Reset Cal
 FX End 1 an ☐

Payment Schedule

Calendar NYC
 Payment Lag 5 Bus
☐ Payment Day
 Date Roll FOLLOWING

MarketData Pricer Params Results

	NPV	DELTA	FWD_DELTA	CA_QUANTITY	NDELTA_COMM	CA_NOTIONAL	NOTIONAL	PV	FEES_NPV
Pay/Rec	-182,758.49	29.86961	30.00000	30.00	3,758.03125	30.00	30.00	-182,758.49	0.0