

TSX MOC MODERNIZATION

TECHNICAL CHANGES OVERVIEW

OVERVIEW

The goal of the new TSX MOC facility is to provide an improved trading experience for our clients, better serve their needs for enhanced liquidity at the close of the market, and efficiency in determining Canada's closing prices. The new TSX MOC facility proposes three high level changes, each designed to address issues of transparency, alignment with global markets, and consistency of execution:

1. Enhanced transparency – **MOC Imbalance notification** message will have 6 new fields of content and will be published every 10 seconds from the beginning of the Imbalance Period until the close. At launch, this will be supported on all feeds where there is an existing MOC imbalance message (Broadcast feed, Level 1 and Level 2 offerings).
2. Newly defined **MOC Imbalance market state** to align with global standards – The MOC Imbalance market state will now start at 3:50 pm (instead of 3:40pm) and will accept MOC and LOC orders with no side, price or volume restrictions. MOC or LOC orders cannot be cancelled. LOC orders may be CFO'ed to a more aggressive price only.
3. Introduction of a **MOC Freeze market state** to mitigate volatility – The new MOC Freeze market state will start at a randomized time between 3:56pm – 3:57pm, and LOC order limit prices are automatically repriced to be no more aggressive than the MOC Reference Price ("Pegged LOC" orders). Orders can not be cancelled or modified.

There are no changes to the way closing orders are entered or the way closing trades are disseminated.

These changes will be available for testing in **GTE starting July 16, 2021** and effective in **Production on October 18, 2021**.

Specifications are available through the

[TMX Webstore](#)

For more information, please visit

[New MOC](#)

FUNCTIONAL AND SUMMARY SPECIFICATION CHANGES

CHANGE	EXISTING TSX MOC	NEW TSX MOC	SUMMARY SPECIFICATION CHANGES
Changes to MOC Imbalance Notification Message	Single imbalance message at start of MOC Imbalance Market State (3:40p.m.).	Imbalance message sent at set time intervals from the start of the MOC Imbalance Market State (3:50 p.m.) to the close (4:00 p.m.).	Market Data <ul style="list-style-type: none"> New transmission times updated on Broadcast, L1 and L2 feeds
	4 existing fields: <ol style="list-style-type: none"> Symbol Reference Price Imbalance Side Imbalance Volume 	Added 6 fields in addition to existing: <ol style="list-style-type: none"> Paired Volume Market Order Imbalance Volume Market Order Imbalance Side Near Indicative Closing Price Far Indicative Closing Price Price Variation 	Market Data <ul style="list-style-type: none"> 6 new fields added to the MOC Imbalance Notification message on Broadcast, L1 and L2 feeds
Changes to MOC Imbalance Market State	MOC Imbalance Market State starts at 3:40p.m.	MOC Imbalance Market State starts at 3:50p.m. MOC market state notification message will now be disseminated at 3:50 p.m. instead of 3:40 p.m.	Order Entry <ul style="list-style-type: none"> New MarketInst tag value "LC" for clients to optionally indicate if clients want to enter a normal LOC (non-Pegged LOC) order only. New order entry rules and MarketInst tag values reflected in applicable MOC / LOC sections in Section 4 Business Content Messages No stock state status notification message will be sent at beginning of MOC Imbalance Market State. LOC orders are accepted on all MOC-eligible symbols regardless of imbalance.
	No MOC orders allowed.	New MOC orders are allowed. No MOC order cancels or modifications permitted.	
	LOC orders need to be on the opposite side, less than size of imbalance and limit price at or within the PME % or 5 ticks of the Last Sale Price.	New LOC orders permitted with no restrictions. No LOC order cancels permitted. Modifications to LOC order price only	Market Data <ul style="list-style-type: none"> BlindOffsetAccepted tag removed from Stock Status notification message on TBF feed

CHANGE	EXISTING TSX MOC	NEW TSX MOC	SUMMARY SPECIFICATION CHANGES
	No LOC order cancels or modifications contributing to imbalance.	permitted to more aggressive price.	
New MOC Freeze Market State	No MOC Freeze Market State.	<p>MOC Freeze Market State prior to close with a randomized start time as determined by TSX. New Pegged LOC orders allowed, will re-price to MOC Reference Price before close if more aggressive for purposes of calculating the calculated closing price.</p> <p>At close of the MOC Freeze Market State, Pegged LOC orders will be repriced to the closing reference price if more aggressive. No cancels or modifications allowed.</p>	<p>Order Entry</p> <ul style="list-style-type: none"> ▪ New order entry rules and MarketInst tag values reflected in applicable MOC / LOC sections in Section 4 Business Content Messages ▪ New value of “MOC Freeze” added as a market state ▪ Market state message for “MOC Freeze” will be published at a random time between 3:56 p.m. and 3:57 p.m. for all stock groups. <p>Market Data</p> <ul style="list-style-type: none"> ▪ New value of MOC Freeze introduced as a market state on Broadcast, L1 and L2 feeds.
Remove Closing Offset order type	Closing Offset order type available.	Removal of Closing Offset order type.	<p>Order Entry:</p> <ul style="list-style-type: none"> ▪ Removal of “CO” value from TSXMarketInst [7739]. Any CO orders will be rejected. ▪ Removal of Section 4.1.10 Closing Offset (CO) orders

CHANGES BY SPECIFICATION

SPECIFICATION	DESCRIPTION OF CHANGE	IMPACTED SECTIONS
<p style="text-align: center;">TSX-FIX Specification and Business Design Guide</p> <p style="text-align: center;">Order Entry</p> <p style="text-align: center;">Version 6.0.1</p>	<ul style="list-style-type: none"> ▪ Changes related to new market states for Market on Close for Freeze Period ▪ Addition of new values for TSXMarketInst field to optionally designate type of LOC order (normal vs Pegged LOC order) ▪ Changes related to removing Closing Offset order type ▪ Added position 10 to TSXExchangeAdmin tag to indicate the order market state. 	<ul style="list-style-type: none"> ▪ 4 Business Content Messages ▪ 4.1.8 Market On Close (MOC) Order ▪ 4.1.9 Limit On Close (LOC) Order ▪ <i>REMOVED - 4.1.10 Closing Offset (CO) orders</i> ▪ 4.3 Order Cancel Request – Cancelling a MOC/LOC Order ▪ 4.4.8 Modify – Limit on Close (LOC) Order ▪ 4.7.1 Order – single acknowledgement ▪ 4.7.3 Execution Report – Replace ▪ 4.7.5 Execution Report – Cancelled ▪ 4.7.8 Execution Report – Partial or Complete Fill ▪ 4.7.9 Execution Report – Assign Time Priority to an Order ▪ 4.8.1 Market State: Session Notification ▪ 4.9 Description of Stock States and Order Entry ▪ 4.10 MOC/LOC order entry functionality for each market state ▪ 5 Field Definitions
<p style="text-align: center;">Broadcast Feed Specification</p> <p style="text-align: center;">TBF / CBF</p> <p style="text-align: center;">Version 9.0.2</p>	<ul style="list-style-type: none"> ▪ Addition of note to indicate Blind Offset Accepted tag [490] will not be sent out at the start of MOC Imbalance state and will only be sent out at the start of PME when the stock is in “Closing Delayed” state. ▪ Addition of 6 new fields to MOC Imbalance message ▪ New values for MarketState field ▪ Changes related to removing Closing Offset order type ▪ Added position 10 to Exchange-Admin to indicate the order market state. 	<ul style="list-style-type: none"> ▪ 5.5 Stock Status Notification Message ▪ 5.6 MOC Imbalance Notification Message ▪ 7 – 9 Field Definitions
<p style="text-align: center;">QRTMD TSX and TSXV Level 1</p> <p style="text-align: center;">TL1/CL1</p> <p style="text-align: center;">Version 2.7.2</p>	<ul style="list-style-type: none"> ▪ Addition of 6 new fields to MOC Imbalance message ▪ Added TradingSystemTimeStamp to MOC Imbalance Notification message. ▪ New values for MOC Freeze MarketState field and MOC market state transmission times 	<ul style="list-style-type: none"> ▪ 3.3 Message Type C – MOC Imbalance Notification ▪ 3.9 Message Type S – Market State ▪ 5 Market On Close (MOC) ▪ 6.1 Transmission Times

SPECIFICATION	DESCRIPTION OF CHANGE	IMPACTED SECTIONS
<p>QRTMD TSX and TSXV Level 2</p> <p>TL2/CL2</p> <p>Version 2.5.2</p>	<ul style="list-style-type: none"> ▪ Addition of note to indicate Blind Offset Accepted tag (490) will not be sent out at the start of MOC Imbalance state and will only be sent out at the start of PME when the stock is in "Closing Delayed" state. ▪ Addition of 6 new fields to MOC Imbalance message ▪ New value of "Moc Freeze" for MarketState field 	<ul style="list-style-type: none"> ▪ 3.6 Stock Status Notification ▪ 3.10 MOC Imbalance Notification ▪ 5 - 7 Field Definitions
<p>TSX & TSXV Level 1 TMX QuantumFeed Business Message Specifications</p> <p>TQL1 / CQL1</p> <p>Version 2.5.2</p>	<ul style="list-style-type: none"> ▪ Clarified timing of MOC Imbalance message ▪ Addition of 6 new fields to MOC Imbalance message 	<ul style="list-style-type: none"> ▪ 2.1 Business message types ▪ 3.5 MOC Imbalance ▪ 4 Field Definitions
<p>TSX & TSXV Level 2 TMX QuantumFeed Business Message Specifications</p> <p>TQL2 / CQL2</p> <p>Version 3.5.1</p>	<ul style="list-style-type: none"> ▪ Addition of 6 new fields to MOC Imbalance message ▪ New value of "Moc Freeze" for market state field 	<ul style="list-style-type: none"> ▪ 2.1 Business message types ▪ 3.4.2 MOC Imbalance ▪ 4 Field Definitions

HIGHLIGHTS OF TECHNICAL CHANGES

1. Introduction of TSXMarketInst on order entry and order acknowledgement

- a. A Pegged LOC order is a special type of LOC order that is accepted during the MOC Freeze market state. It is entered in exactly the same way as a LOC order type (TimeInForce(59) = 7 (At the Close) + OrdType(40) = 2 (Limit)). There is no need to enter any value into the TSXMarketInst tag – if the LOC order is received during the MOC Freeze market state, it will automatically be processed as a Pegged LOC order.
- b. If you do not want your LOC order to be a Pegged LOC order and are concerned that you may have sent your order after the market state has transitioned to MOC Freeze, you may enter TSXMarketInst(7739) = "LC". If this is received during the MOC Freeze, the order would be rejected.
- c. Regardless of whether the TSXMarketInst(7739) tag was entered on the new order, the **TSXMarketInst(7739) tag will be added to the Order-single acknowledgement message** with the value "PL" if it was processed as a Pegged LOC order and "LC" if it was a normal LOC order.
- d. The **TSXMarketInst(7739) tag will also be added to all MOC execution reports that resulted from a LOC order**, to indicate whether this was traded from a LOC order (TSXMarketInst(7739) = "LC") or a Pegged LOC order (TSXMarketInst(7739) = "PL").
- e. Note that the Pegged LOC order is pegged to the MOC Reference Price, but there is *no message* sent out each time the MOC Reference Price changes. The MOC Reference Price is used as the price of aggressive Pegged LOC orders in the calculation of the Near Indicative Closing Price and Far Indicative Closing Price on the MOC Imbalance message, as well as the final Calculated Closing Price.
- f. Example:
 - i. Buy 1,000 sh ABC, TimeInForce(59) = 7, OrdType(40) = 2 is sent during the MOC Freeze market state. TSXMarketInst should not be sent.
 - ii. Order-single acknowledgement will send back **TSXMarketInst(7739) = PL** in addition to other tags sent in
 - iii. There is no other messaging sent out, even as the MOC Reference Price changes
 - iv. When the order trades, the execution report will also have **TSXMarketInst(7739) = PL** in addition to normal execution report tags, it will execute at the closing price
- g. References:
 - i. TSX-FIX Specification and Business Design Guide v6.0.1
 - 4.1.0 Limit on Close (LOC) Order
 - 4.7.1 Order - single acknowledgement
 - 4.7.8 Execution Report - Partial or Complete Fill

2. CFO LOC to more aggressive order during MOC Imbalance Period

- a. To allow more flexibility in the MOC Imbalance Period, clients can now CFO their LOC order, to a more aggressive price only.
- b. No other properties can be changed on the LOC order other than the price. If a client CFO's other properties in addition to a valid price change, the valid price change will be accepted but *all other properties will be ignored*. This will be reflected in the order-single acknowledgement message.

- c. Example:
 - i. Buy ABC, TimeInForce(59) = 7, OrdType(40) = 2, OrderQty(38) = 1000, Price(44) = 10.00 is sent during MOC Imbalance market state.
 - ii. CFO OrderQty to 1,500 sh (from 1,000 sh) and Price to \$10.02 (from \$10.00)
 - iii. Order-single acknowledgement will show that the Price has been updated to \$10.02 (Price(44) = \$10.02), but order volume stays at 1,000 sh (OrderQty(38) = 1000)
- d. References:
 - i. TSX-FIX Specification and Business Design Guide v6.0.1
 - 1. 4.1.0 Limit on Close (LOC) Order
 - 2. 4.7.1 Order - single acknowledgement
 - 3. 4.4.8 Modify - Limit on Close (LOC) Order

3. Removal of Stock Status Notification (BlindOffsetAccepted) message at start of MOC Imbalance Period

- a. Currently TSX sends out a stock status notification message at the start of the MOC Imbalance period for each symbol that has a MOC imbalance, that would be accepting offsetting orders (BlindOffsetAccepted (STAMP = 490) = "OffsetAcpt")
- b. In the new MOC model, there is no such concept of only allowing offsetting orders during the Imbalance market state. New LOC and MOC orders are accepted for all MOC-eligible symbols regardless of imbalance during the new MOC Imbalance market state, making this message unnecessary. Thus, we have removed this Stock Status Notification message at the start of the MOC Imbalance market state, and also the tag BlindOffsetAccepted (STAMP = 490).
- c. Note that the BlindOffsetAccepted (STAMP = 490) tag is also on the PME imbalance message, which will not be changed and will only continue to accept offsetting orders (side opposite to the imbalance, volume less than the size of the imbalance). This will be kept on the PME imbalance message **unchanged**.
- d. References:
 - i. Broadcast Feed Specification v8.6.0
 - 5.5 Stock Status Notification Message
 - ii. QRTMD TL2/CL2 Functional Specifications v2.5.0
 - 3.6 Stock Status Notification

4. Self-Trade messaging after closing auctions

- a. In order to support self-trade management, TSX will be publishing order cancels and re-book orders that traded in a self-trade in order that the order book is accurate. This happens currently during continuous trading. You will also now see this messaging added to the closing trade messages where there are self-trades involving visible orders.
- b. Example:
 - i. The following orders are entered in the closing auction:

#	BUY ORDER	BUY VOLUME	SELL VOLUME	SELL ORDER	#
1	Iceberg - self-trade key "EM 111", broker 2	1,200 (2,000 total)	1,000	MOC - self-trade key "EM 111", broker 2	2
			500	MOC - no self-trade key, broker 2	3

- ii. The messages that would be published are listed below. New messages are highlighted in yellow.

SEQ	PUBLIC / PRIVATE	MESSAGE TYPE	MESSAGE
1	Private	Trade Report - STM	Trade Report for Order 1 vs Order 2 @ 1000 sh, self-trade = Y. Displayed volume for Order 1 is 200.
2	Public	Cancel	Iceberg Order 1 - Cancelled confirmation for 1200 sh
3	Public	Book	Iceberg Order 1 - Booked confirmation for 200 sh remaining under a new public order number
4	Public	Trade Report	Trade Report for Order 1 vs Order 3 @ 500 sh, self-trade = N. Displayed volume for Order 1 is 0.
5	Public	Book	Order 1 - Booked confirmation for 500 sh (iceberg refresh) under a new public order number