TSX MOC

The New MOC - FAQ

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http://www.tsx.com/new-moc

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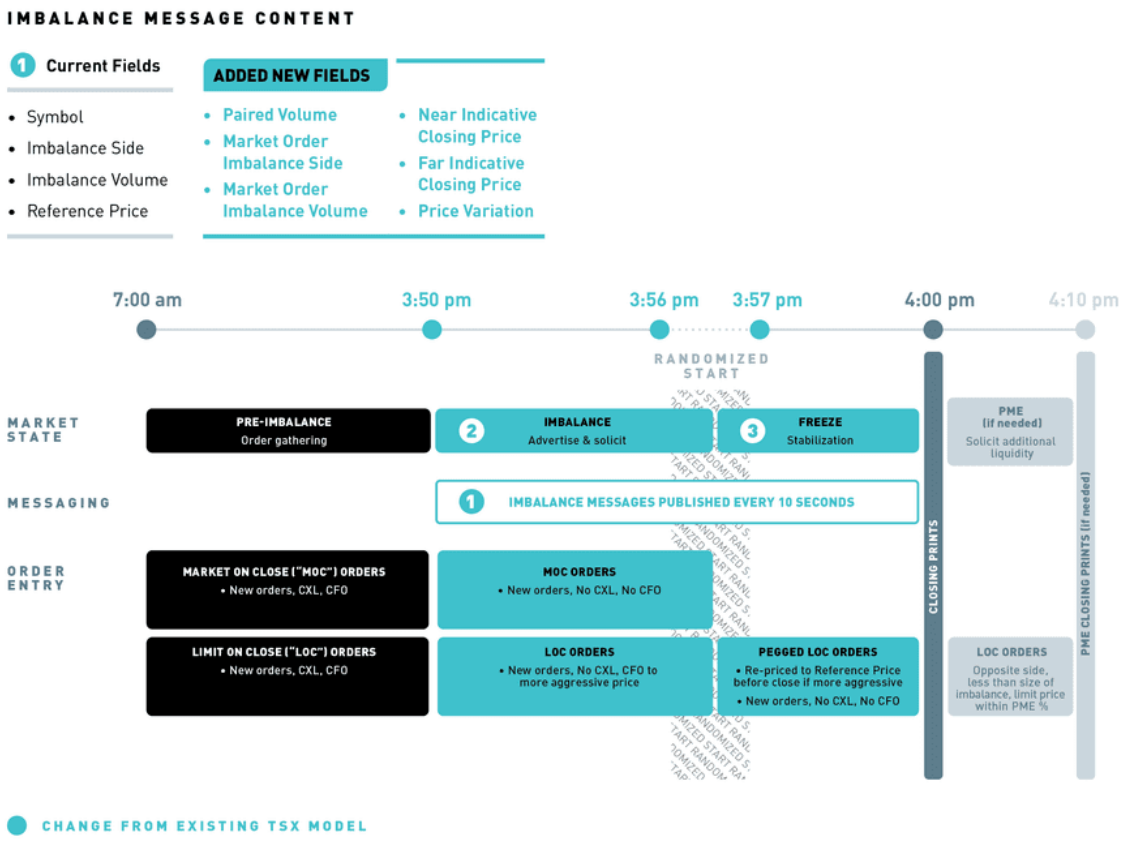
THE NEW MOC MODEL



1. PRE-IMBALANCE (7:00am – 3:50pm)

1.1. Is the Pre-Imbalance different in the new MOC vs the current MOC?

No. The new MOC's pre-imbalance period (from 7:00am to 3:50pm) functions the same as the current MOC. The market states in the pre-Imbalance Period are: Pre-Open and Post-Open.

1.2. Can I cancel MOC and LOC orders during the Pre-Imbalance Period?

Yes. MOC and LOC orders can be cancelled, or CFO'd, during the pre-Imbalance period with no restrictions.

2. MOC IMBALANCE MESSAGES (3:50pm – 4:00pm)

2.1. What is the frequency of the Imbalance Message publication?

Imbalance messages will be published to the feed every 10 seconds, starting @ 3:50pm, and will continue until 3:59:50pm.

2.2. What are the new fields being added to the Imbalance Message content?

The following six (6) fields will be added to the imbalance message. Together with the existing four (4) fields of Symbol, Imbalance Side, Imbalance Volume and Reference Price, the new TSX MOC imbalance message will have a total of ten (10) fields.

a. **PAIRED VOLUME -** The number of MOC and LOC shares that are able be matched at the Reference Price.

b. **MARKET ORDER IMBALANCE VOLUME -** Indicates the share Imbalance when considering MOC orders only. *Note this will not change from the Freeze period as MOC orders are not allowed after this time.*

c. **MARKET ORDER IMBALANCE SIDE -** Side (buy or sell) of the Market Order Imbalance Volume.

d. **NEAR INDICATIVE CLOSING PRICE** • The calculated closing price that will maximize the number of shares matched based on on-close orders (MOC, LOC) and visible

continuous market orders. Undisplayed volume is excluded from this calculation to prevent information leakage. Effectively, this is the price at which the closing print would occur at the time of publication.

e. **FAR INDICATIVE CLOSING PRICE -** The calculated closing price that will maximize the number of shares matched based on closing interest only (MOC, LOC). This calculation excludes CLOB orders.

f. **PRICE VARIATION -** This field indicates the absolute value of the percentage of deviation of the Near Indicative Closing Price from the Reference Price. This will alert traders of symbols that may close outside of the volatility parameters and encourage offsetting liquidity.

2.3. Why is the Far Indicative Closing Price needed if there is already a Near Indicative Closing Price that is more accurate?

While the Near Indicative Closing Price is more accurate as it takes into account CLOB orders, we recognize that CLOB orders are not locked in and subject to change. By providing both indicative closing prices (with and without CLOB orders), we felt that this gives participants even more information on which to base their trading decisions.

2.4. Is DRK and iceberg volume included in the Near Indicative Closing Price calculation?

No, it was determined that, in order to not leak information on our hidden order volumes, which are not currently published anywhere pre-trade, TMX will not include this volume in the Near Indicative Closing Price calculation.

2.5. What is the purpose of the Price Variation? Can't participants just calculate this themselves from the other information provided on the imbalance message?

Yes, this is true that participants are able to calculate the Price Variation from the Reference Price and Near Indicative Closing Price fields. However, we thought it may still be more convenient for TMX to calculate and publish it, as it can act as an "alerting" mechanism of symbols that may close outside of the PME parameters and encourage offsetting liquidity.

2.6. Will the imbalance message be sent out even if the fields are not changing?

Yes, the imbalance message will be sent out every 10 seconds, with the most up to date fields, even if the values have not changed. This provides consistency of experience,

where clients can be sure that they have the latest MOC imbalance information based on the last published imbalance message.

2.7. Where can I see the imbalance messages?

The MOC imbalance messages are published on all TSX real-time level 1 and level 2 data feeds, including binary feeds. It is also available on the TMX IP CDF feed. We expect that vendors that read and display TSX data will be able to access it through the TSX feeds - please contact your vendor for specifics.

The TSX website will continue to display the first MOC imbalance message at the beginning of the MOC imbalance period (now at 3:50pm). The website will not be updated for any subsequent MOC imbalance messages.

2.8. Why is there a different MOC Imbalance message sent right at 4:00pm that doesn't have the new fields?

The last MOC imbalance message will be sent out 10 seconds before the close (i.e. 3:59:50pm). At 4:00pm, if the stock closing price is outside the Price Movement Extension % and the stock needs to go into closing delayed state (PME), a PME MOC imbalance message will be sent out at that time, with only the MOC Reference Price, Imbalance Side and Imbalance Volume. This message is the same as in the old MOC model and has no changes. Please see the table below for a quick summary of the 2 messages:

	MOC Imbalance Message	PME MOC Imbalance Message
Timing	Every 10 seconds from the start of the Imbalance (3:50:00pm) to the 10 seconds before the close (3:50:50pm)	Once at 4:00pm
Stocks	All MOC-eligible stocks	Only stocks that go into the PME (closing delayed stock state)
Fields Per Symbol	1. Imbalance Reference Price 2. Imbalance Side 3. Imbalance Volume 4. Paired Volume 5. Market Order Imbalance Side 6. Market Order Imbalance Volume 7. Far Indicative Closing Price	1. Imbalance Reference Price 2. Imbalance Side 3. Imbalance Volume

	MOC Imbalance Message	PME MOC Imbalance Message
	8. Near Indicative Closing Price 9. Price Variation	
Notable Differences	• Imbalance Reference Price is the midpoint of the TBBO • This message is informational only and does not impact the price, volume and side that LOC orders can be entered during the Imbalance and Freeze market state	• Imbalance Reference Price is the Last Sale Price • This message determines the price, volume and side that offsetting LOC orders can be entered in the PME market state

3. IMBALANCE PERIOD (3:50pm – 3:56pm)

3.1. What is the purpose of the *imbalance period?*

The **imbalance period** is intended to advertise and solicit liquidity into the MOC book. In order to adhere better to global standards, and to provide our participants additional flexibility, TMX has moved this period from 3:40p.m. to 3:50p.m., allowing an additional 10 minutes to contribute MOC volume with the option to cancel. The time extension will allow participants to accommodate later MOC interest, and reduce the lock-in period for MOC orders by half.

3.2. What orders am I allowed to enter during the imbalance period?

MOC and LOC orders can be entered any time during the imbalance period.

3.3. Are my LOC orders still restricted to a certain price, volume and side?

No, there are no longer any restrictions on the price, volume and side that can be entered on your LOC order. LOC orders can be entered with any price, volume or side.

3.4. Can I cancel my LOC or MOC order during the Imbalance Period?

No. Similar to the current model, LOC and MOC orders can not be cancelled during the Imbalance Period. This applies to all LOC and MOC orders, whether they were entered prior to the Imbalance Period or during the Imbalance Period.

3.5. What happens if my LOC order is no longer marketable?

The TMX has improved flexibility by allowing participants to amend LOC orders to a more aggressive price (higher price for buys and lower price for sells/shorts) during the Imbalance Period.

3.6. The Imbalance Period does not restrict side like today's model does. Won't that cause more surprises and reduce confidence?

While imbalance flips may occur during the Imbalance Period, the increased message content and frequency will dramatically increase the insight available to participants during this time and will help to inform participants well ahead of the close fundamental changes in the Imbalance.

Furthermore, this period is designed to collect the orders of all participants who require executions in the closing auction; orders intended to offset imbalances can be placed during the freeze period without risk of an imbalance flip.

4. FREEZE PERIOD (3:56pm – 4:00pm)

4.1. What is the Freeze Period?

The **Freeze Period** is a new market state added prior to the close. It starts at a randomized time between 3:56pm EST and 3:57pm EST and runs until the close (4:00pm). It is intended to solicit last minute price stabilizing offsetting liquidity, and prevent unexpected price and imbalance movements. As such, aggressive LOC orders ("Pegged LOC orders") placed during this period will be repriced passively to the Reference Price on close as to not impact the price of the auction aggressively.

4.2. What is the purpose of the randomization on the Freeze Period?

The purpose of the randomization period is to discourage last minute, large LOC orders, from being entered going into the facility by those participants who wish to flip or control the direction of the closing imbalance.

4.3. Will symbols transition into the freeze period together or will the randomization period affect each symbol differently?

The Freeze Period will start at a randomized time between 3:56pm EST and 3:57pm EST but all symbols will transition together on the same day.

4.4. What orders am I allowed to enter during the Freeze Period?

LOC orders can be entered any time during the Freeze Period, and will be treated as "Pegged LOC orders", which means that if the price is more aggressive than the MOC Reference Price, then it will be repriced to the MOC Reference Price.

4.5. What is a Pegged LOC order?

A Pegged LOC order is simply a LOC order entered during the Freeze Period. Pegged LOC orders are "pegged" to the MOC Reference Price such that the price is re-priced to the MOC Reference Price if it is more aggressive (buy orders with a price greater than the Reference Price, and sell orders with a price lower than the Reference Price). For Pegged LOC orders less aggressive than the Reference Price, the limit price remains as entered and there is no difference from a normal LOC order.

Before the close, Pegged LOC orders re-price to the MOC Reference Price for purposes of calculating the calculated and indicative closing price, if its order limit price was more aggressive.

At the close, Pegged LOC orders are re-priced to the MOC Reference Price, if its order limit price is more aggressive. Additionally, if the MOC reference price is less aggressive than the closing price (and the closing price is within the order limit price), Pegged LOC orders are repriced to the closing price to participate in the closing auction.

Note that because Pegged LOC orders get repriced to the MOC reference price, their priority in the closing allocation is as of the less aggressive of the MOC reference price / closing price or the limit price. As such, Pegged LOC orders can go unfilled or only partially fill even if the order limit price was more aggressive than the closing price.

4.6. How do I enter a Pegged LOC order?

You can enter in a Pegged LOC order the same way as you enter a LOC order - no new tags needed. You will get an order confirmation with the TSXMarketInst (7739) tag with

the value "PL" that will confirm that your LOC order has been processed as a Pegged LOC order during the Freeze Period.

4.7. Can I CFO or cancel orders during the Freeze Period?

No. There are no cancels or CFOs allowed on any orders during the Freeze Period.

4.8. How does the new MOC model prevent imbalance flips?

The most important restriction during the Freeze Period is the restriction on aggressively priced LOC orders. Aggressive LOC orders placed during the Freeze Period will be repriced passively to the MOC Reference Price, which is the midpoint of the quote. This means that an aggressive LOC of any size placed on the side of the imbalance is not able to drive the closing price in a single direction.

4.9. With all of this Pegged LOC volume repriced to the midpoint will we allow for half tick closing prints?

It is possible that repricing large quantities of Pegged LOC orders during the Freeze Period to the MOC Reference Price, where that MOC Reference Price is an invalid tick (e.g. half tick for single tick bid/ask spreads), may result in a calculated closing price that is at an invalid tick. In such cases, in order to maintain closing prices at valid ticks, the aggressive Pegged LOC orders will be re-priced to the nearest valid tick to the MOC Reference Price such that the calculated closing price will be at a valid tick according to the current calculated closing price methodology. Please refer to the TSX MOC Modernization - Detailed Guide for details and a scenario of how this would work.

4.10. What happens to my MOC or LOC order if it's entered in during the transition from the Imbalance Period to the Freeze Period?

A MOC order entered during the Freeze Period will be rejected. A LOC order entered during the Freeze Period will be treated as a Pegged LOC order. This will be reflected in the order confirmation back on the MarketInst tag with value "PL". If the LOC order was entered using the TSXMarketInst (7739) tag with the value "LC" that specifies this as "normal" LOC order only, then the order will be rejected.

4.11. If I put in a Pegged LOC order on the same side of the imbalance, can I expect to get a fill?

It depends on the final Calculated Closing Price ("CCP") and the contra side volume. In order for a Pegged LOC order that has been entered on the same side of the

Imbalance to be executed, its limit price must be executable at the CCP and there must be enough contra side order volume executable at the CCP.

For example, MOC Imbalance Side = Sell, Imbalance Volume = 1M shares, MOC Reference Price = $10.00. Sell Pegged LOC order for 1M shares is entered @ $10.00, which adds to the imbalance sell side, increasing the Imbalance Volume to 2M. In order for any of the Sell Pegged LOC order to be filled, assuming that the CCP is $10.00 and there is no broker preferencing, contra Buy Pegged LOC order(s) totaling more than 1M shares executable at the CCP would need to be entered in order to execute the full Sell Pegged LOC order volume. Anything less than 1M shares and the Sell Pegged LOC will have some remaining volume unexecuted.

4.12. What is the difference between a LOC order and a Pegged LOC order?

A Pegged LOC order is simply a LOC order received during the Freeze Period where the aggressive limit price is repriced to the MOC Reference Price. See table below for key differences:

	LOC order	Pegged LOC Order
Time order is accepted	Prior to 3:56pm, during market states: Pre-Open, Post-Open, and MOC Imbalance	During market state MOC Freeze, which starts between 3:56pm – 3:57pm to close.
How to enter	No change from current LOC order: TimeInForce(59) = 7 (At the Close) + OrdType(40) = 2 (Limit)). Optional TSXMarketInst(7739) = "LC" if you do want it rejected during MOC Freeze market state	No change from current LOC order: TimeInForce(59) = 7 (At the Close) + OrdType(40) = 2 (Limit)).
TSXMarketInst(7739) value on order and trade confirmation	TSXMarketInst(7739) = "LC"	TSXMarketInst(7739) = "PL"
Restrictions on Price, Side, Volume?	None on order entry.	None on order entry. Limit Price more aggressive than MOC Reference Price will be re-priced to MOC Reference Price for closing price calculations.

	LOC order	Pegged LOC Order
Allocation Priority	After MOC market orders, by limit price, broker, time.	Same as LOC orders, by limit price, broker, time. Limit Price is re-priced to MOC Reference Price if its more aggressive. Additionally, if the MOC Reference Price is less aggressive than the closing price (and the closing price is within the order limit price), Limit Price is re-priced to the closing price.

5. CLOSING ALLOCATION (4:00pm)

5.1. What is changing with the closing allocation in the new MOC model?

There are no changes to the general principles of allocation of MOC trades or the manner and time in which closing trades are disseminated in the new MOC. This means that during allocation, MOC / LOC orders would continue to be prioritized by price, followed by broker, followed by time.

5.2. How are Pegged LOC orders prioritized?

Pegged LOC orders are prioritized the same as LOC orders - except that the price level for priority is at the MOC Reference Price if the Pegged LOC entered limit price is more aggressive than the MOC Reference Price. At the same price level, orders are prioritized by broker and the time the order was entered.

5.3. What happens to Pegged LOC orders that are ineligible to trade at the CCP due to the MOC Reference Price being less aggressive than that CCP?

For Pegged LOC orders where the re-priced limit price to the MOC Reference Price is less aggressive than the Calculated Closing Price ("CCP"), these orders are repriced to the CCP and traded last in priority. For example, at closing, the MOC Reference Price based on a TBBO of $10.00 / $10.02 is $10.01, and the CCP is $10.00. Sell Pegged LOC orders priced at $10.01 would not be able to trade at $10.00. These "passive Pegged LOC" sell orders are then repriced to the CCP of $10.00 to trade, as long as it doesn't

violate the entered limit price. These sell orders will trade if there is sufficient contra side liquidity.

6. PRICE MOVEMENT EXTENSION (4:00pm – 4:10pm)

6.1. What is changing with the Price Movement Extension ("PME") in the new MOC model?

The functionality of the PME is not changing. If a symbol goes into PME, the existing PME imbalance message will be sent out indicating the symbol, Reference Price (which is the Last Sale Price), Imbalance Side and Imbalance Volume. Offsetting orders will be accepted subject to the following rules:

- Must be opposite to the published imbalance at 4:00 pm
- Volume on each order must not exceed the published imbalance
- Limit price must be between the last sale price and the CPA range

Note that the PME imbalance message does NOT include any of the new fields.

6.2. What are the PME Volatility Parameters?

There are no changes to the volatility parameters as part of the new MOC model as it is applied to the PME. Note that since there are no longer any restrictions on the price, volume or side of LOC orders entered during the Imbalance Period and Freeze Period, these parameters are **not** applicable prior to PME.

For reference, the existing volatility parameters are:

MARKET	MOC ELIGIBLE SECURITIES	PME %	CPA %
TSX	Equities	3% or five trading increments	10%
TSX	Preferred Equities	1% or five trading increments	5%

MARKET	MOC ELIGIBLE SECURITIES	PME %	CPA %
TSX Venture	Equities	5% or five trading increments	15%

The PME % is used to determine if the CCP will be accepted as the MOC Closing Price. If the CCP compared to the Last Sale Price of the VWAP during the Imbalance Period (3:50pm - 4:00pm) is greater than the PME %, the symbol will go into PME.

The CPA % is used to determine the allowable price range for LOC orders accepted during the PME.

7. GENERAL

7.1. Are there any changes to which symbols are MOC-eligible?

There are no changes to which symbols are MOC-eligible in the New MOC model. Current MOC-eligible symbols are available on the TSX Website. All TSX-listed corporate securities (excludes ETFs) are MOC-eligible. Some TSX Venture symbols being tracked as part of an index are MOC-eligible based on client demand.