

6 March 2020

**VOLATILITY CONTROL
MECHANISM (VCM)
&
PRE-OPENING SESSION (POS)
ENHANCEMENTS
IN THE
SECURITIES MARKET**

HKEX
香港交易所

HKEX Cash Trading

AGENDA

1

VCM Enhancement (Phase 1 – VCM Securities Expansion)

2

Pre-opening Session (POS) Enhancement

3

Implementation Timeline



Objectives of VCM

VCM

POS

Timeline



Prevent extreme price volatility arising from trading incidents such as the “flash crash” and algorithm errors



Avoid systemic risks caused by interlinked products in the securities market



Maintain a fair and orderly market

Strike a Balance between Market Protection and Trading Interruption



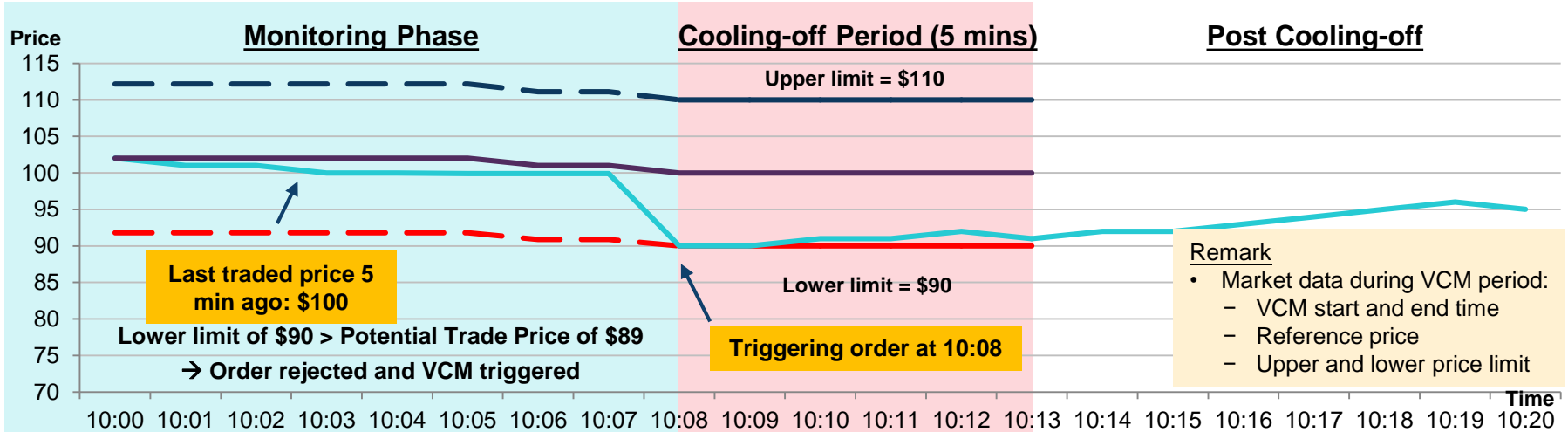
Background of VCM Enhancement

- ✓ Since VCM launched in 2016, further guidance from IOSCO⁽¹⁾, regulated markets should review and calibrate volatility controls from time to time
- ✓ HKEX decided to enhance VCM after the consultation in 2019, and implemented in two phases



(1) International Organisation of Securities Commissions (IOSCO)
(2) Hang Seng Index (HSI)
(3) Hang Seng China Enterprise Index (HSCEI).

Illustration of current VCM



Remark

- Market data during VCM period:
 - VCM start and end time
 - Reference price
 - Upper and lower price limit

— Upper Price Limit
 - - - Lower Price Limit
 — Trading Price
 — Reference Price

- At 10:08
- Ref price is \$100, which is the last automatch traded price 5 minutes ago; the price band is \$90-\$110
 - When an order is about to execute below the lower limit of \$90, the order is rejected and the VCM is triggered
- A 5-min cooling-off period commences
 - Trading is allowed within a fixed price band (\$90-\$110)
 - Trading of linked instruments are not affected
- Resume to normal CTS
 - A max of 1 trigger per session in the Morning and Afternoon Continuous Trading Sessions
 - No VCM in first 15 mins of the Morning and Afternoon Continuous Trading Sessions
 - No VCM in last 15 min of the Afternoon Continuous Trading Session



Phase 1 Enhancements – Expand VCM Coverage

VCM

POS

Timeline

Current Model

Enhanced Model

1 Securities Coverage

Major benchmark indexes

HSI and HSCEI (82 stocks) ⁽¹⁾

Hang Seng Composite LargeCap, MidCap, SmallCap Indexes (~500 ⁽¹⁾ stocks)

Cover larger sized based indexes

2 Trigger Thresholds

±10% from last trade 5 minutes ago

Single Threshold

Tiered Thresholds based on size (from last trade 5 minutes ago)

LargeCap: ±10%
MidCap: ±15%
SmallCap: ±20%



(1) Date as of 15 October 2019

Phase 1 Enhancements – Expand VCM Coverage

1 Expansion of Securities Coverage

HSI and HSCEI constituents
(82 stocks)

- Market Capitalisation Coverage : 61%
- Equity Turnover Coverage: 66%

- Hang Seng Composite **LargeCap Index** constituents
- Hang Seng Composite **MidCap Index** constituents
- Hang Seng Composite **SmallCap Index** constituents
(~500 stocks)

- Market Capitalisation Coverage : 90%
- Equity Turnover Coverage: 96%



Phase 1 Enhancements – Tiered Thresholds

2 Triggering Thresholds

Current - Single Threshold

	Trigger Level and Price Band within Cooling-off
HSI & HSCEI Constituents	±10%



New - Tiered Thresholds

HSCI Constituents	Trigger Level and Price Band within Cooling-off
HSCI LargeCap	±10%
HSCI MidCap	±15%
HSCI SmallCap	±20%

- **Information Dissemination through the HKEX website for market participants' reference :**
 - Applicable securities which are subject to VCM monitoring; and
 - Applicable triggering thresholds for individual security (or for different groups of securities)



Phase 2 Enhancement (after phase 1) – Multiple Triggers

Current & Phase 1 Mechanism

Limited to 1 trigger per trading session (i.e. max. 2 triggers per day)

- Reference price determined by the last automatched price 5 minutes ago
- Resume trading with no VCM monitoring within the same CTS session

Subject to review six months after the initial VCM expansion

Phase 2 Implementation

No limit on the number of triggers

- VCM monitoring resumes immediately after the expiry of 5 mins cooling-off period
- 1st automatched trade concluded in the cooling-off period becomes the reference price for VCM monitoring thereafter ⁽¹⁾

- Allow the market to experience a trigger first after the initial VCM expansion, and implement multiple triggers six months after the initial VCM expansion, subject to a review by HKEX on market operations amid VCM triggers
- Will inform the market before the implementation of multiple triggers, and will not be subject to a separate consultation

(1) If there is no automatched trade concluded during cooling-off period, the 1st automatched trade concluded after the cooling-off period will become the reference price and VCM monitoring will be resumed thereafter.



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Background of POS Enhancement

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POS

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Enhance POS
Liquidity



Improve Price
Discovery



Model launched for 17+ years since 2002 and market has advanced since then

Market participants requested using some relevant features of CAS to POS model

A proven CAS model with market familiarization for ~ 3 years

Market Consultation - General market support to improve current POS



Key Features of Enhanced POS Model

		Pre-Opening Session			
Time	9:00	9:15	9:20	9:22	After matching 9:30
Session	Order Input Period (15 mins)	No-cancellation Period (5 mins)	1 Random Matching Period (0-2 mins)		Blocking Period (8-10mins)
Description	2 Price Limit: ±15% of previous closing price	Within lowest ask & highest bid (recorded at the end of Order Input Period)			Unfilled at-auction limit orders will be carried forward to CTS as limit orders
	Order Type Allowed:	At-auction Order			
	Actions Allowed: ✓ Input/Cancel/Amend	✓ Input ; ✗ Cancel & Amend			
	3 At-auction Limit Order				

Continuous Trading Session (CTS)



Other Enhancements

- 4 Applicable Securities (POS Securities): all equities, funds and Leveraged and Inverse Products (LIPs)
- 5 Allow short selling on designated securities eligible for short selling (DS) with a tick rule referencing to the previous closing price
- 6 Additional market data dissemination



Key Features of Enhanced POS Model

1

RANDOM MATCHING PERIOD

- Total Duration: max. 2 mins
- Order matching will randomly start between 9:20 – 9:22
- Upon start of order matching, input / cancel / amend of orders will not be allowed
- No order matching will be conducted if Indicative Equilibrium Price (IEP) cannot be determined

2

PRICE LIMIT

- Apply two-stage price limits
- 1st Stage: $\pm 15\%$ from the previous closing price (NOT applicable to pre-defined scenarios⁽¹⁾)
- 2nd Stage⁽²⁾: Within the lowest ask and highest bid prices recorded at the end of order input period.

Please be noted that, to facilitate trading after the pre-opening, buy order can be entered between the -15% of the previous closing price and upper price limit; while sell order can be entered between +15% of previous closing price and lower price limit. If the order input price exceed the upper/ lower price limit, orders will not be executed.

3

ORDER TYPE

- Allow At-auction Limit Orders throughout the session

Period	AO ⁽³⁾	ALO ⁽⁴⁾
Order Input	✓	✓
No-Cancellation	✓	✓
Random Matching	✓	✓
Blocking	✗	✗

(1) In the absence of the Previous Closing (i.e. Previous Closing Price = N/A), IPO stocks and stocks resuming from trading suspension, 1st stage price limit checking will be relaxed for Order Input Period.

(2) In case there is no buy order and/or sell orders recorded at the end of Order Input Period, the 2nd stage price limits will be same as the 1st stage price limits.

(3) At-auction order

(4) At-auction limit order

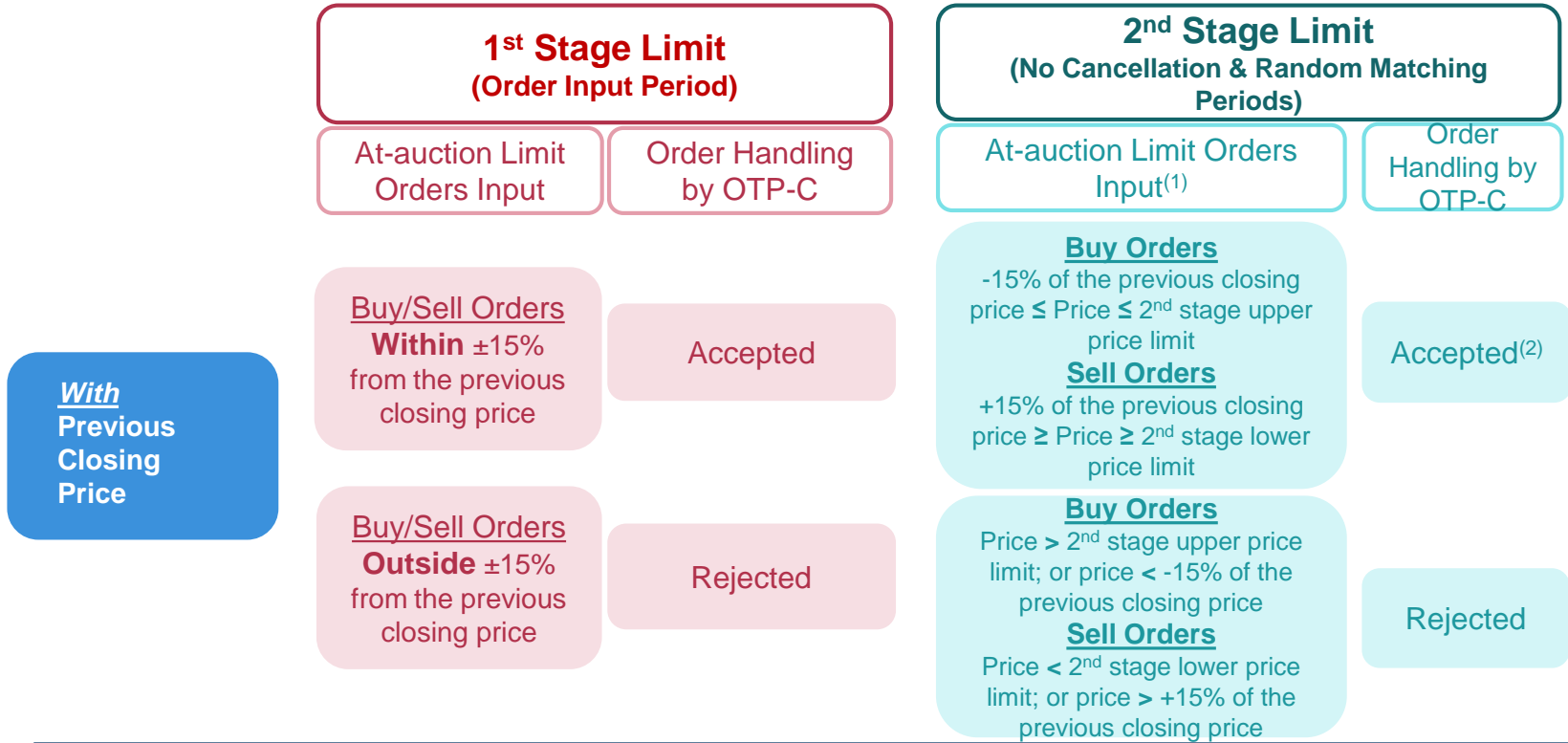


Illustration of Price Limits in POS

VCM

POS

Timeline



(1) All At-auction limit orders input in No Cancellation Period and Random Matching Period cannot deviate more than $\pm 15\%$ of previous closing price (i.e. 1s stage limit).
 (2) IEP will only be formed between the 2nd stage upper and lower price limit.

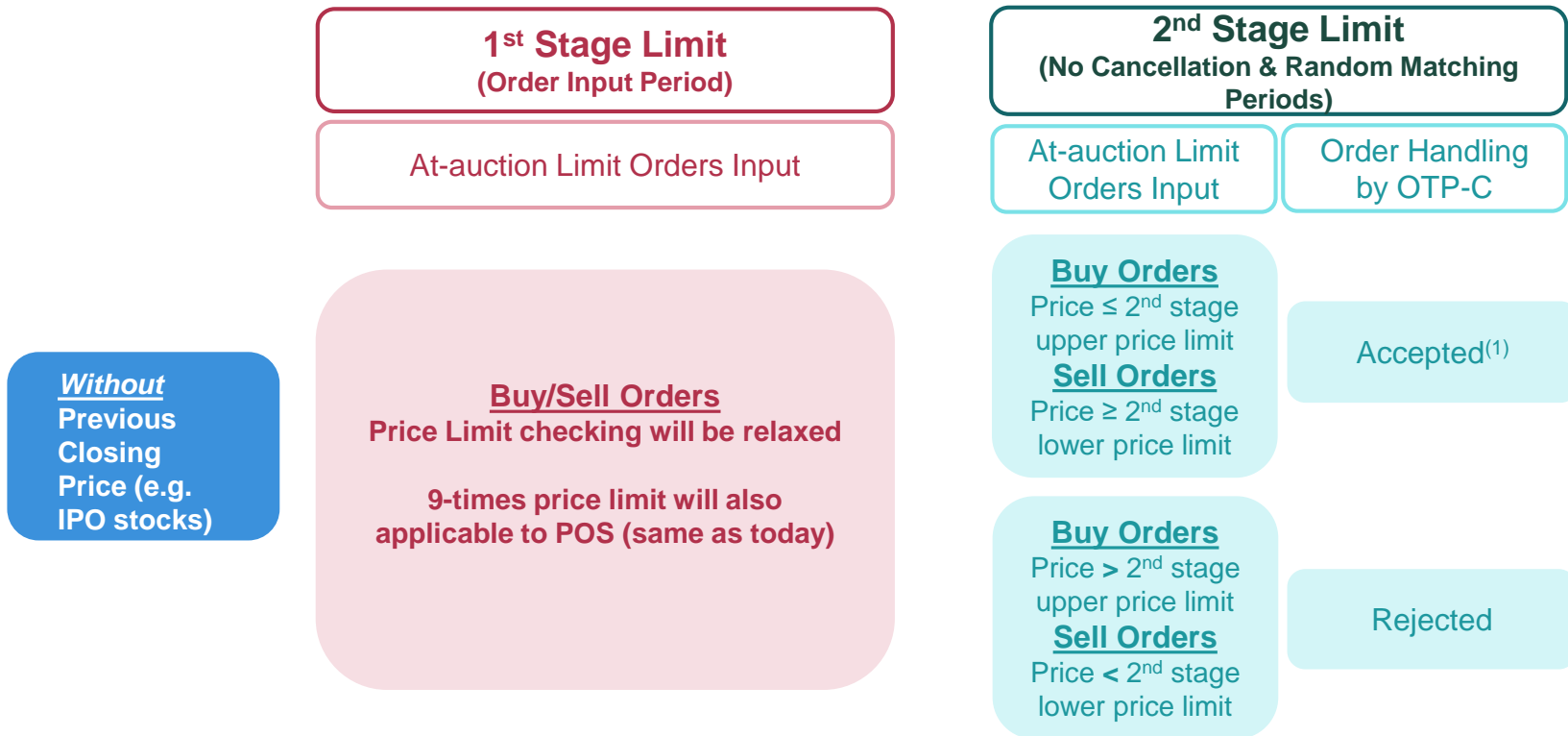


Illustration of Price Limits in POS

VCM

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(1) IEP will only be formed between the 2nd stage upper and lower price limit.



Key Features of Enhanced POS Model

VCM

POS

Timeline

4

APPLICABLE SECURITIES

- All equities (including depository receipts, investment companies, preference shares and staple securities)
- Funds (including Exchange Traded Funds (ETFs), Leveraged and Inverse Products (LIPs) & Real Estate Investment Trusts (REITS))
- LIPs will also be included in Closing Auction Session when POS is implemented for consistency and be launched at the same time

5

SHORT SELL ALLOWANCE

- Short selling order can be input on short selling securities during POS, with price cannot be lower than previous closing price⁽¹⁾ (i.e. tick rule⁽²⁾)

6

MARKET DATA DISSEMINATION

Disseminate to Market:

- POS stock indicator
- Reference Price for Order Input Period
- Indicative Equilibrium Price (IEP)
- Indicative Equilibrium Volume (IEV)
- Order imbalance information (direction and quantity)
- Stage 1 and Stage 2 price limits
- Trading State during the POS



(1) In the absent of the Previous Closing Price (i.e. Previous Closing Price = N/A), input of short sell orders in POS will be rejected.

(2) Tick rule will be relaxed for some securities same as CTS and CAS (e.g. ETFs, L&I)

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Implementation Timeline for VCM Enhancements

(Phase 1 – VCM Securities Expansion)

Orion Central Gateway (OCG) and Orion Market Data – Securities (OMD-C)

- No change in system interface due to the implementation of Phase 1 – VCM Securities Expansion

For Phase 1 VCM Enhancement	Date	Participants
End-to-End Test	23 – 27 March 2020	Optional for <u>all</u> EPs to participate
Practice Session	Mid April 2020, Saturday	Optional for <u>all</u> EPs to participate
Launch Phase 1 VCM	May 2020	~

(Phase 2 – VCM Multiple Triggers)

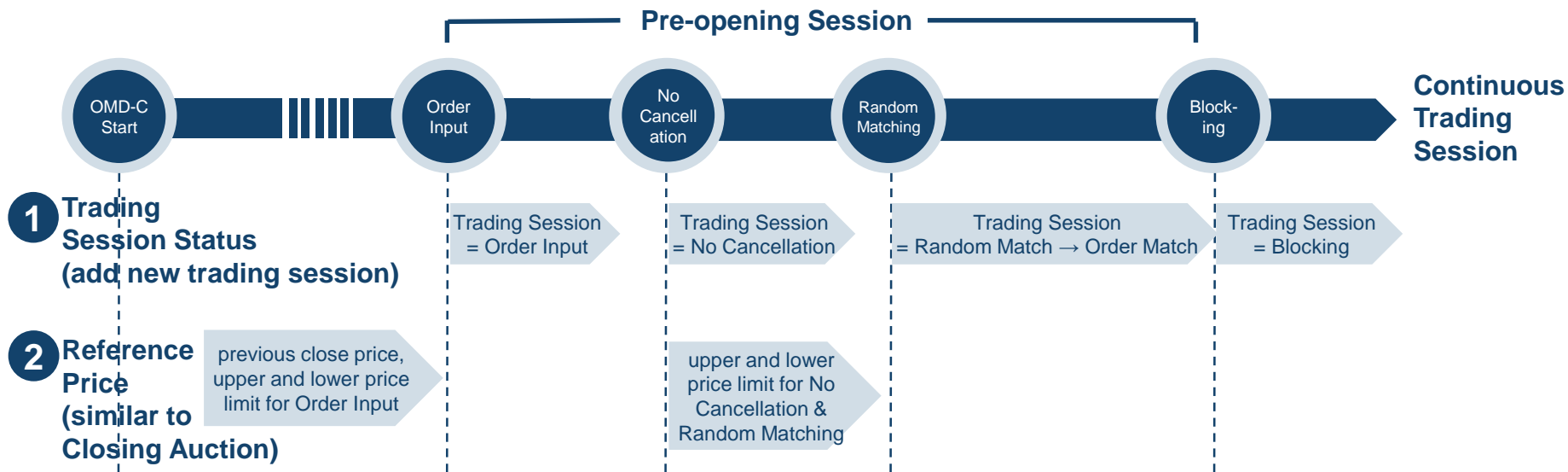
- Implementation timeline will be announced in due course after completion of a review six months after the phase 1 VCM expansion



Implementation Timeline for POS Enhancements

Change in HKEX Market Data Feed for the Enhanced POS

- OMD-C will support the Enhanced POS by disseminating the relevant information:



Implementation Timeline for POS Enhancements

Testing Schedule for OMD-C

All OMD-C direct connection clients have to conduct testing and participate Market Rehearsal to validate their readiness.

HKEX will provide facilities for OMD-C direct connection clients to prepare for the change:

- March / April 2020: Publish updated OMD-C interface specification
- June / July 2020: Provide canned data (for clients conduct testing in End-to-End environment, please refer to page 21)
- August 2020: Clients declare readiness
- September 2020: Conduct Market Rehearsal



Implementation Timeline for POS Enhancements

OCG

- No change in system interface due to the implementation of POS Enhancement

POS Enhancement	Date	Participants
End-to-End Test*	Tentative July 2020 – early August 2020 (3 - 4 weeks)	Mandatory for <u>all</u> EPs to participate
Market Rehearsal	Tentative September 2020, Saturday	Mandatory for <u>all</u> EPs to participate
Launch	Tentative October 2020	~

* Test case details will be notified in due course.



Further Information and Enquiries

Project Corner⁽¹⁾

More reference materials (information books, educational videos etc.) will be posted in the project corner

Enquiries

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(1) https://www.hkex.com.hk/Services/Trading/Securities/Overview/Trading-Mechanism/POS-and-VCM-Enhancement-Initiatives?sc_lang=en





APPENDIX

Appendix: Comparison Between Current and Enhanced VCM Model

	Current VCM	Enhanced VCM
Type of VCM	Dynamic price limit model at the individual stock level to capture rapid price changes	
Securities Coverage	HSI & HSCEI constituent stocks	Constituents of All Hang Seng Composite LargeCap, MidCap and SmallCap Indexes
Applicable trading session	Only applied in CTS but not auction sessions ⁽¹⁾	
Reference Price	Last traded price 5 minutes ago	
Triggering level	±10%	±10%: Large Cap ±15%: MidCap ±20%: SmallCap
No. of triggers	Max 1 trigger per CTS session	Phase 1: Max 1 trigger per CTS session Phase 2: No maximum number of triggers per CTS
Cooling-off procedures	Trading within band during 5 mins cooling-off period	
Market data dissemination	Dissemination of additional market data when VCM triggered	
Inter-market/ product connectivity	Trading of related instruments unaffected when VCM triggered for their underlying	

(1) For VCM monitoring, it exclude first 15 mins. of morning and afternoon CTS and last 20 mins of the last CTS of the day



Appendix: Comparison Between Current and Enhanced POS Model

	Current POS				Enhanced POS			
Securities Coverage	All securities				Equity Securities & Funds			
Period & Order Types Allowed	Period	Time	At-Auction Order	At-Auction Limit Order	Period	Time	At-Auction Order	At-Auction Limit Order
	Order Input	9:00 – 9:15 (15 mins)	✓	✓	Order Input	9:00 – 9:15 (15 mins)	✓	✓
	Pre-order Matching	9:15 – 9:20 (5 mins)	✓	✗	No-cancellation	9:15 – 9:20 (5 mins)	✓	✓
	Order Matching	9:20 – 9:28 (8 mins)	✗	✗	Random Matching ⁽¹⁾	9:20 – 9:22 (0-2 mins)	✓	✓
	Blocking	9:28 – 9:30 (2 mins)	✗	✗	Blocking	After Match – 9:30 (8-10 mins)	✗	✗

(1) Enhanced POS Random Matching Period: Order input allowed until matching starts randomly within 2 minutes.



Appendix: Comparison Between Current and Enhanced POS Model

	Current POS	Enhanced POS
Price Limit	No fixed price range ⁽¹⁾	A two-stage price limit to at-auction limit orders: <ul style="list-style-type: none"> • 1st stage: $\pm 15\%$ of previous closing price • 2nd stage: within the lowest ask and highest bid recorded at the end of Order Input Period • 9-times rule still applicable
Short Selling	Not allowed	Allowed with tick rule (i.e. price cannot be lower than the previous closing price)
Market Data Dissemination	Indicative Equilibrium Price (IEP) Indicative Equilibrium Volume (IEV)	IEP IEV POS Stock Indicator Order imbalance information Reference Price (i.e. Previous Closing Price) Stage 1 and Stage 2 price limits

(1) Except 9-times rule



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