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Considerations of a Continuous Trading Environment and Implications for Central Clearing of U.S. Listed Options

Perspectives on CCP Issues from
a Utility Model Clearinghouse

OCC

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This paper evaluates what it would take for the U.S. listed options ecosystem to operate in an extended hours or continuous trading model, and offers a set of considerations as part of this transition.

A phased evolution to a 24-5 and 24-7 trading and clearing model for U.S. listed options, beginning with near-continuous models like 22-5 and 23-5, is both achievable and prudent, provided the necessary industry alignment across all market participants.

Several key dependencies must be addressed collectively in this phased transition, such as around-the-clock price discovery, market data consolidation and dissemination, and the movement of money outside of legacy hours, for example.

There are also challenges unique to options contracts and their parameters as well as to central counterparties ("CCPs"), that would need to be addressed to facilitate a smooth transition.

To address some of those considerations and challenges, this market evolution will require coordinated agreement and the use of newfound tools of risk management across all stakeholders that support the trade lifecycle.

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Considerations of a Continuous Trading Environment and Implications for Central Clearing of U.S. Listed Options

Background and Overview

The trend in increasing trading hours for derivatives contracts presents opportunities for added investor access and for investors to respond to market developments in a timely manner. It also introduces significant challenges for clearinghouses, in areas such as operations, liquidity, risk management, regulatory compliance, and investor education, among other factors.

The momentum behind the transition towards increased trading hours will depend on market demand, strategic alignment across the industry, and a regulatory environment that adjusts in parallel. At OCC, we have begun to discuss what is needed with respect to central clearing of U.S. listed options to support the trend toward near-continuous and continuous trading.

For purposes of this paper, 24-5 trading refers to markets that operate continuously from Sunday evening to Friday evening, typically aligning with operating hours of global financial markets, providing continuous trading during weekdays while still pausing on weekends.

Extending further, 24-7 trading refers to markets that operate continuously without interruptions for weekends or most holidays, allowing trading activity at any hour, any day of the week. As markets consider expanding beyond traditional trading hours, some models may in fact be more aspirational than others.

The 22-5 and 23-5 models refer, instead, to markets that operate near-continuously from Sunday evening to Friday evening with a scheduled downtime or maintenance window without trading. In practice, some clearinghouses that currently state they operate on a 24-5 or 24-7 basis in fact have a one- or two-hour pause built into the processing schedule.

For many CCPs and other financial market infrastructures ("FMIs"), near-continuous trading and clearing hours like 22 or 23 hours for 5 days a week still offer many of the benefits of increased operational hours, while retaining strategic windows for system maintenance, reconciliation, and trade processing.

Select OCC Clearing Members ("CMs") have expressed interest in participating in OCC's extended trading hours ("ETH") session.¹ OCC is currently exploring how to address additional requests from exchanges to facilitate trading hours in the early morning, all while mitigating unintended consequences that may disincentivize U.S. investors.

Given the need for OCC to perform end-of-day risk and collateral processing as part of settlement within present systems, this paper will focus the discussion on a potential move toward near-continuous trading and clearing models, like 22-5 or 23-5, that allow for a window of trade reconciliation and maintenance, backups, deployments of data, as well as end-of-day processing.

Key Stakeholders Required to Enable Near-Continuous and Continuous Trading and Clearing of U.S. Listed Options



The Momentum Behind Near-Continuous and Continuous Trading

Traditional financial markets are increasingly shifting towards a trading environment with expanded hours, driven by technological innovation and demand for increased market access from a global investor base.² In the U.S., exchanges and retail brokerage firms are leading this trend. Exchange operators like Nasdaq, Cboe Global Markets ("Cboe") and Intercontinental Exchange ("ICE") have all publicly expressed their intention to make trading on their equity venues available on a near-continuous or continuous basis.³ The Securities and Exchange Commission ("SEC") has also approved 24X National Exchange to allow securities trading for 23 hours per day, 5 days a week.⁴ Part of the momentum is driven by the success of alternative trading systems ("ATS") that operate in the overnight session, sourcing order flow from both retail as well as leading market makers.

In addition, several national brokerages, including Robinhood and Charles Schwab, have expanded their trading hours for their clients, allowing for overnight trading of most securities that are part of major indices.⁵ Several derivatives exchanges have also announced, or are actively exploring, transitions towards continuous or near-continuous trading models. Coinbase launched 24-7 trading for Bitcoin and Ethereum futures in early May 2025, in addition to planning to offer perpetual-style futures contracts later, pursuant to regulatory approval.⁶ CME offers 24-5 trading access (with a one-hour pause each day 5:00 p.m. to 6:00 p.m. ET) for a wide array of commodity futures and options products and has announced the move towards 24-7 trading by the end of 2026.⁷

As another example of a U.S. CCP moving in this direction, the National Securities Clearing Corporation ("NSCC") plans to increase clearing hours to support extended trading in the cash equities market. NSCC implemented phase 1 of the new extended trading hours schedule in 2024 by enabling market centers and trading platforms to submit trades for processing at 1:30 a.m. ET. Under plans for phase 2, which will take effect in Q2 2026, NSCC will operate 24-5 for all asset classes, from Sunday at 8:00 p.m. ET to Friday at 8:00 p.m. ET to support overnight trading activity from ATS firms as well as exchanges.⁸

Moreover, the Canadian Derivatives Clearing Corporation ("CDCC") follows a 22-5 trading and clearing model, with two distinct clearing and settlement cycles: the overnight cycle starting at 8:00 p.m. ET and ending at 8:15 a.m. ET the following business day (limited to interest rate derivatives and index futures only), and the regular cycle starting at 8:15 a.m. ET and ending at 6:00 p.m. ET the same business day.⁹

For its part, OCC has offered clearing services for select members and products in the ETH program since 2015 through our Encore Global platform. Currently, trading by select OCC CMs on two exchanges, Cboe and CFE, are eligible for ETH, with products limited to index options and index futures. The ETH session time on Cboe's ETH-eligible products is end of business day at 8:15 PM until 9:30 AM EST the next business day morning. Meanwhile, CFE eligible products start trading earlier, starting at end of business day at 6:00 PM EST for CFE with the window ending at 5:00 PM EST the following day.

This whitepaper will explore the following considerations and their impact on the U.S. listed options industry and OCC:

- Payment and settlement constraints
- Mobility of collateral
- Operational readiness and resilience
- Liquidity and market depth
- Options parameters and options lifecycle events
- Investor protections
- Interoperability among FMIs
- Global coordination

Considerations and Challenges of Transitioning to a Near-Continuous Trading Environment

For the market to eventually achieve a continuous trading and clearing model, the first step would be a gradual transition to a near-continuous 22-5 trading environment. This would allow CCPs, CMs, and regulators to gain meaningful experience to gradually adapt their technology and processes to handle managing near-continuous weekday operations, while using weekends to perform necessary maintenance. While some market participants may have experience with extended trading hours, this is not the case across the board, particularly for smaller firms or organizations with less capital. By gradually moving toward a 22-5 model, market participants can refine critical process workflows, develop new risk protocols, and validate operational readiness in a controlled and scalable manner, before considering fully continuous 24-7 trading, including weekends and holidays. The 22-5 model also provides for scheduled daily downtime windows, to test, refine, and update system upgrades. Two hours per day in a 22-5 trading environment would allow some CCPs to perform critical processes that would otherwise be more challenging to carry out during the live trading session or in one hour.

Enhancements to the Movement of Payments Across the Industry

Banking entities occupy multiple and interconnected roles throughout the trade lifecycle, acting as custodians and settlement banks. The latter roles are central to the operations of CCPs, enabling the movement of cash and collateral, among other factors.

In a near-continuous trading and clearing model, however, legacy banking hours, which align with the traditional 8-hour business days, represent one of the most significant—and least flexible—constraints in providing clearing services across extended trading hours.

Presently, most margin and settlement cycles are scheduled to occur within workday hours, with no standard support for settlement outside of the traditional trading session, largely tying margin obligations to be met during this time. Collateral held at bank custodians can only be mobilized within this timeframe, further exacerbating this dependency.

When legacy banking entities are closed, stable instruments may enable on-chain, near-instant transfer of margin and settlement obligations.

CCPs may require CMs to add margin to account for intraday changes in risk and P&L profiles that may arise from expanded trading hours, but would only be able to do so if a custody or settlement agent is also observing expanded hours.

To address the increased risk of extended trading in the short-term, CCPs may limit credit exposures and put in place select margin add-on charges or pre-funding, for example, to account for potential additional risk of price movements or position adjustments, absent the availability of settlement in the overnight window.

In the long-term, intraday margin processes may be enhanced. CMs themselves have largely put in place their own pre-funding mechanisms for their clients, if they offer extended trading hours. In parallel to CCPs, CMs will likely need to continue that practice or find novel ways to address this with their own clients.

On the other hand, permissioned distributed ledger technology ("DLT") could be leveraged for enabling clearing and settlement during extended trading hours, particularly when legacy banking entities and payments

railways are offline.¹⁰ DLT tools provide an alternative mechanism for clearing and settlement of transactions that could allow a CCP to record and enforce margin calls and collateral transfers outside of legacy banking hours.

Tokenization is one example of this type of tool, where a digital representation of an underlying asset, such as a stable instrument or a stablecoin, can be mobilized to meet margin and collateral obligations, accompanied by on-chain smart contracts to enforce applicable rights.

If deemed eligible collateral, covered stable instruments could act as collateral for margin obligations. Because of their value, legal claim, and redemption mechanics, stable instruments can function similarly to cash for settlement, collateral or liquidity purposes. In essence, a smart instrument is not just a digital placeholder, but an instrument representing real-world assets that carries within itself the instructions for its own management and behavior, enforced by the immutable and transparent nature of the blockchain through smart contracts.

When legacy banking entities are closed, stable instruments may enable on-chain, near-instant transfer of margin and settlement obligations. This can reduce pre-funding needs for extended trading hours, improve liquidity mobility, and support delivery versus payment with tokenized collateral. For a CCP to leverage stable instruments at scale, eligibility criteria, haircuts, wallet controls, and legal finality, among other factors, would have to be determined and codified within applicable frameworks.

As another type of stable, tokenized asset, proponents of stablecoins highlight faster transactions, lower costs, greater transparency, and immediate availability as some of the advantages. Unlike other traditional securities, stablecoins do not require manual custody processes, and can be moved or allocated consistent with a CCP's risk policies.

Currently, however, stablecoins primarily function as intermediaries in the financial system, requiring substantial liquidity, as well as conversion to traditional currencies. For stablecoins to achieve widespread adoption, there may need to be a fundamental change in industry expectation.¹¹

The notion of legal finality and settlement assurance of stablecoins has recently been addressed in the U.S. by the "Guiding and Establishing National Innovation for U.S. Stablecoins Act" or the "GENIUS Act," by establishing clear legal rights for stablecoin holders and ensuring that the underlying reserves are protected and accessible even in insolvency scenarios.¹² Appropriate regulatory agencies have been empowered to pursue rulemaking to implement applicable market structure regulation.

Procedural and Process Changes

It is important to note that one of the major challenges in transitioning to a near-continuous or continuous trading environment is the option product itself. A listed equity option is for the most part a standardized financial derivative, based on an equity security, with a strike price and expiration date.

Expirations currently occur on a fixed weekly, monthly, and quarterly schedule at market close with final exercise decisions finalized by 11:59 p.m. ET, and would likely need to be adjusted. In a near-continuous or continuous trading environment, corporate actions and other options lifecycle events may fall outside of a traditional schedule.

Demand for new strikes or adjusted strikes could emerge overnight, yet contract creation is often batched and based on pre-market or overnight processes. Stock splits or dividend adjustments, for example, are reflected in strike prices, premiums and delivery, and can require manual review and processing.

The ability of the underlying equity security to trade, clear and settle near-continuously or continuously is very important for the 22-5 or 24-5 trading and clearing of listed options. Market participants, particularly market makers and liquidity providers, rely on price discovery of the underlying to price and trade options contracts accurately. If the equity is not trading, or if the price is stale during extended trading, options pricing may become skewed.

The characteristics of listed options present unique operational and risk considerations in a near-continuous or continuous trading environment.

Options market makers typically hedge their risk in real-time by transacting in the underlying security at the same time, and, if the underlying is not open for trading, the market maker may withdraw from quoting altogether.

There are also important considerations related to the National Market System ("NMS") plans. For example, the Options Price Reporting Authority ("OPRA"), administered by the Securities Industry Automation Corporation ("SIAC"), disseminates consolidated last sale and quotation information originating from the participating national options exchanges.

OPRA disseminates data on a real-time, continuous basis, but the publication of the consolidated feed is

synchronous only with: trading hours currently observed by each of the options exchanges; and, the select products those exchanges offer during that window. OPRA can publish data outside of its 'regular trading day' of 7:30 a.m. to 6:00 p.m. ET only at the request of a Member exchange.

While the OPRA Plan currently provides the basis for this transition, the operations and feed architecture of OPRA must evolve to support consolidated data during near-continuous or continuous trading for all its Members, and must account for low-latency, high-reliability transmission across all trading hours.

For example, recently the Securities Information Processors ("SIPs") committees for equities markets announced they will soon submit a plan to expand their operating hours to match the operating hours of NSCC.¹³

Further, to accommodate near-continuous and continuous trading of listed options, the industry would have to define a trading day consistently, and delineate between 'traditional' hours and 'extended' sessions. This would facilitate CCPs consuming data for risk analytics, and to clear and settle trades according to either traditional or extended trading sessions and their specific economics.

Further, the NMS codifies consolidated reporting requirements tied to official open and close times. Moving to 22-5, for example, challenges the assumption of a 'business day'. Parts of the Consolidated Quotation System run by OPRA would need to be enhanced to reflect newfound timestamps, 'official' closing prices, and end-of-day data.

The industry can only begin to effectively tackle the various implementation considerations and operational challenges of extended trading hours only after reaching a consensus on how the trading day would look. To maintain coherence and avoid fragmentation, some examples of key points of time in the day on which the industry could coalesce under a unified extended trading hours model are:

Key Point of Time in the Day:	Purpose:
Pricing Time	Snapshots for all market participants to run applicable analytics
Valuation Time	Publishing official settlement price
Operational Cutover	Points in time in which batch processing or risk calculations can be run
Trade Date	Delineation between T and T+1
Clearing Date	Date rollover time for clearing

Similarly, there would have to be industry alignment on how to process corporate actions and other options lifecycle events into an extended trading environment. Current practice is that cutoffs for processing these material market events typically occur after the close of the traditional trading day, which offers a processing buffer to update reference data, publish notices to CMs, and adjust and reconcile records. Market participants may choose to introduce pre-scheduled operational adjustment windows during which new corporate actions are processed and adjustments to contract terms are formally loaded into systems.

Companies generally schedule important disclosure announcements outside traditional trading hours in regulated financial markets. This timing promotes fair markets, maintains orderly trading conditions, and helps protect investors from outsized volatility. Corporate actions (including dividends, stock splits, rights issues, and mergers) depend on specific timing benchmarks like record dates and ex-dates that establish eligibility for benefits. These timeframes must coordinate with settlement processes, as continuous trading combined with batch or time-constrained settlement operations could create inconsistencies between trade execution and entitlement recording. This could be managed through designated administrative deadlines or pre-scheduled filing times, as examples. A 22-5 trading and clearing model also offers the opportunity of a two-hour

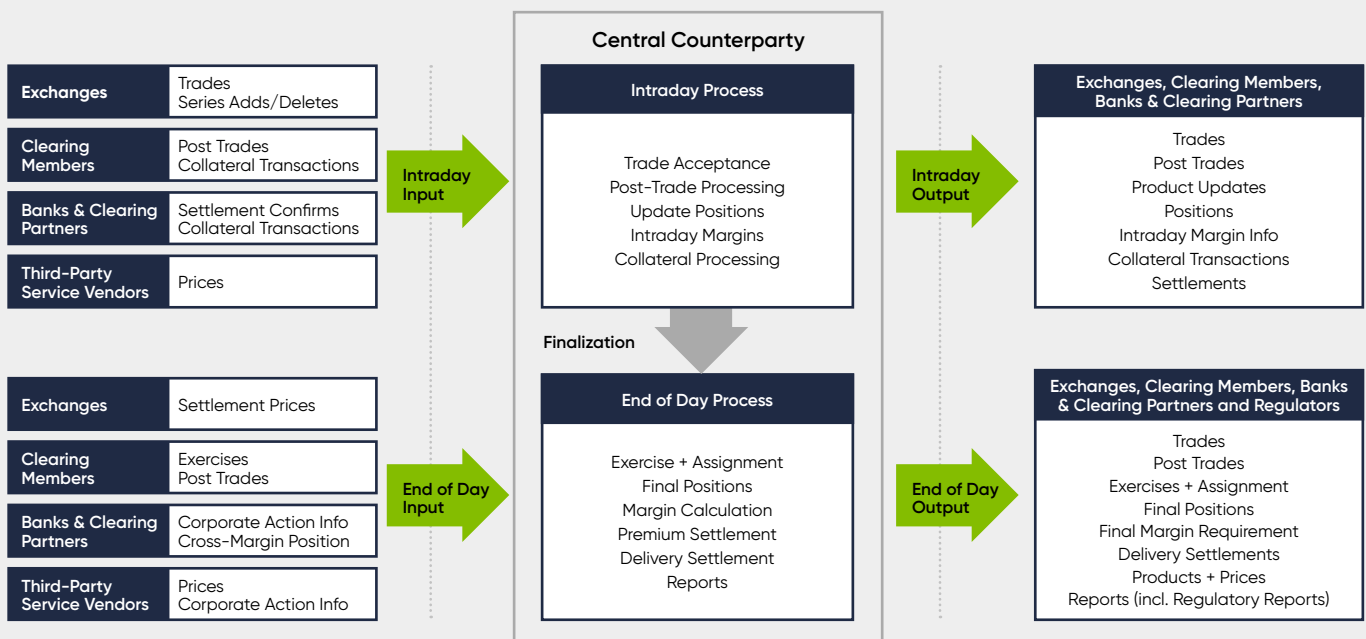
window for making important announcements while trading is paused.

Payment and Settlement Liquidity Considerations

Central banks may consider expanding the hours they offer account services to CCPs designated as Systemically Important Financial Market Utilities ("SIFMUs"). The ability to post or receive cash via the Federal Reserve outside of the traditional trading session would reduce the impact of dependencies to commercial bank business hours. In addition to cash access, payment and settlement infrastructure supported by central banks must also evolve to accommodate the needs of a continuous trading environment.

For example, the National Settlement Service ("NSS"), used for multilateral netting between clearinghouses and CMs, currently operates very close to the present U.S. trading open and close times. In a 22-5 trading model, the current window of NSS operating hours would need to be adjusted to support the real-time margining that CCPs would have to employ. These enhancements by central banks may not only mitigate identified risks but may also likely reduce the reliance on procyclical tools, like excess collateralization.

Current Flow of Intraday and End-of-Day Processes at OCC



These processes would need to shift to event-driven workflows in a continuous trading and clearing model.

In a near-continuous or continuous trading environment, the inaccessibility of central bank payment railways outside of traditional operating hours also creates constraints on settlement and the movement of margin. CCPs may work with central banks to explore enhancements to infrastructures and settlement pathways, to bridge the gap between legacy banking hours and expanded market activity. The Fedwire Funds Service ("Fedwire") is critical to the daily functioning of U.S. FMs, including in the settlement of margin, default fund obligations, and collateral transfers.

OCC supports the Federal Reserve's proposal to increase the availability of Fedwire and NSS to 22 hours per day 7 days a week, from the current 5 days a week. Such expanded hours could allow a SIFMU to take advantage of broader hours for the settlement of time-critical payments, and to reduce credit risk.¹⁴ The proposed expansion of Fedwire and NSS availability is an important step towards enabling next-day settlement for all trading days. Expanded access would allow OCC to collect margin from CMs during ETH, thus allowing OCC to collateralize position risk sooner without the need for conservative pre-funding.

Market Depth Challenges

Market depth will be an important consideration in evaluating the implementation of expanded trading hours. Insufficient overnight demand will question whether it is worth the costs of offering extended trading hours.¹⁵ Historically, trading activity in options markets has coalesced around specific points in time of the day, particularly during the overlap of trading hours in North America and Europe, and before the U.S. equity close, with market depth benefits arising from economies of scale. Research suggests that extending trading hours into overnight and pre- or post-market sessions often leads to market fragmentation and reduced trading liquidity; these conditions were documented to have led to higher transaction costs for participants seeking to initiate or unwind positions during extended trading hours.

These market dynamics carry risk management implications. Shallow market environments can manifest price gapping, where modest trades can lead to outsized market moves and can lead to changes in valuations of positions and, thus, increases in margin requirements. All market participants may need to modify applicable risk frameworks to address greater price volatility during extended trading hours. Another consideration is the behavior of market makers, who may scale back quoting activity during extended trading hours, due to wider uncertainty, lower volumes, and less capacity to hedge. If market maker participation decreases during extended trading hours, it could lead to episodic volatility and a degradation of price discovery.

Market depth will be an important consideration in evaluating the implementation of expanded trading hours.

These challenges notwithstanding, liquidity would likely not be uniform across the entire 22-5 trading session. As with global foreign exchange and select futures markets, trading activity in an around-the-clock model may naturally concentrate around certain points in time associated with defined dayparts on which the industry agrees. Predictable liquidity windows may, thus, offer sufficient depth for institutional investors, while also providing anchors that may limit impacts to systemic risk.

At OCC, for example, we have seen low trading volumes and only few examples of spikes in volume related to major events during extended trading hours throughout the years. Even when volumes spike in extended trading, the notional amount is still small compared to that of normal trading hours. For example, trade volume during extended trading hours fluctuated between 0.10% and 0.34% of total contract volume for that day over the 6 days from August 20 to August 27, 2025 (for all eligible products). ETH volume never accounted for 1% of daily contract activity over this period, and, while it is a small sample, it is reflective of extended trading hours activity at OCC.¹⁶

OCC Extended Trading Hours Contract Volume by Date and as Percentage of Daily Total Contract Volume

Business Date:	Contract Volume in Extended Trading Hours:	Percent of Total Contract Volume for Date:
8/20/25	98,971	0.13%
8/21/25	133,324	0.21%
8/22/25	226,257	0.34%
8/25/25	107,928	0.10%
8/26/25	107,840	0.15%
8/27/25	100,092	0.11%

Workforce and Human Capital Adjustments

Implementing extended trading hours across the industry will require changes to operations, staffing and associated processes. Workforce changes would need to be adopted, with a focus on operational continuity and human capital management. From an industry-wide perspective, the move to 22-5 trading challenges long-standing rules and practices on which the industry relies for daily processes.

Adopting expanded trading hours may also involve operational, staffing and process adjustments across the industry.

Market participants, such as CCPs, CMs, exchanges, brokers, banks, and custodians, would need to modify their operational playbooks to support trade capture, confirmation, risk monitoring, and settlement during defined extended trading hours.

This could potentially include expanding overnight or early-morning teams, adjusting shift structures, ensuring that critical personnel—from risk managers, information technology, to collateral operations—are available and empowered to act outside of traditional dayparts. Weekend downtime would still provide a defined window for any system upgrades and maintenance.

Third-party vendors would have to be part of considerations in workforce changes too. In an extended trading environment, market participants need to enhance oversight of third-party vendors in a way that reflects resilience and responsiveness expectations in extended hours.

Presently, third-party risk management is often structured around periodic performance assessments, service-level agreements (“SLAs”), as well as incident escalation protocols, which can be tied to traditional business hours. SLAs largely require that a representative of the critical third-party vendor be ‘on call,’ and most market participants operate with incident response call sheets with identified contacts should a specific issue need to be escalated.

Thus, third-party risk management frameworks may have to be modified to reflect differences between traditional and extended trading hours. SLAs may need to be modified to explicitly require continuous coverage, as well as predefined recovery time objectives in the event of an incident response during defined extended trading hours.

Firms may consider adjusting their resilience testing to include simulations of overnight disruptions and third-party outages that happen during non-traditional hours. Staff of physical facilities, such as data centers, and communication vendors, such as call centers, may also expand their operational hours.

Investor Protection and Education

Existing investor protection frameworks may need to be evaluated and possibly updated to reflect an extended trading environment. Regulators may mandate risk flags

or alerts for certain order types or strategies entered during low-volume extended trading hours. The SEC and CFTC, for their part, may consider expanding market surveillance coverage to provide oversight during non-traditional hours. Investor protection also involves fair access and execution standards, which require that venues choosing to offer extended trading hours nevertheless maintain transparent order handling and pricing practices across all trading sessions. In addition, existing rules around best execution and suitability may need interpretive guidance from the regulators to reflect novel continuous trading markets.

The transition to increased trading hours will not only reshape the operational and risk landscape for financial institutions, but it will also transform the investor experience. As such, investor education should be considered in a market transition like this. A growing body of behavioral finance research suggests that retail investors trading outside of traditional windows may be more prone to impulsive behavior and confirmation bias, risks that may be exacerbated in near-continuous and continuous trading environments.¹⁷ The Options Industry Council (“OIC”) would be well-positioned to develop new educational modules and support options disclosure documentation addressing the unique risks and behaviors associated with trading listed options during extended trading hours, for example.

What Would OCC Need to Put in Place to Support 22-5 Trading and Clearing of U.S. Listed Options?

To accommodate a transition to near-continuous trading in the U.S. listed options market, OCC would need to invest in human capital and adjust its clearing and risk management practices. Supporting a 22-5 trading model would require a strategic expansion of operational coverage, and a reimagining of key clearing and collateral functions to ensure uninterrupted service and risk oversight.

OCC may transition from a staffing model centered around traditional U.S. business hours to a framework that includes strengthening technological, operational and financial risk management for U.S.-based staff in the extended trading hours. Staffing operations outside of traditional business hours is not merely a question of headcount – it is about ensuring that experienced, decision-ready professional staff are available to manage real-time margining, address trade breaks, respond to settlement exceptions, and otherwise execute contingency plans in the event of a default event.

Alternatively, OCC could move toward global or follow-the-sun coverage, potentially establishing teams in different regions and time zones. This would not only require increased human capital investments across information systems and operations, including in first-line risk management, but also in compliance and other

functions responsible for potential new administrative requirements in regions in which OCC currently does not have a presence.

Moreover, the core business processes may need to move to event-driven workflows. Today's centralized cut-offs for trade processing, market close pricing, margin calculation, and collateral management may need to evolve to accommodate real-time processing, including during periods of low activity.¹⁸ OCC may need to employ enhanced margining practices to cover the expanded trading hours during its period of risk. Analytical models may need to be recalibrated to deal with the potential for thinner liquidity periods and increased price volatility across non-traditional trading hours.

In the short-term, OCC may need to consider pre-funding of margin to account for increased overnight volatility, but longer-term may need to implement processes for more frequent intraday margin calls, some of which may occur during extended hours, to promptly address changes to risk, calls which may be made at pre-specified times. Larger CMs may be able to fulfill margin requirements for extended trading hours by establishing an account that can be drawn down outside the traditional trading day, but for smaller participants this would be a capital burden. Further, a downtime window of two hours as part of a near-continuous trading and clearing model would afford OCC the opportunity to anchor pricing and risk analytics to a fixed daypart.

Accommodating near-continuous trading in the U.S. listed options market may call for OCC to invest in human capital and adjust aspects of its clearing and risk management practices.

Currently, OCC has one standard settlement cycle as part of business operations, where net obligations for CMs are calculated and settled once per day. Near-continuous trading models may require multiple settlement and margin collection windows. OCC may need to consider, for example, implementing two or more margin and settlement cycles every twenty-four-hour period, which may align with pools of liquidity.

Further, if U.S. settlement banks opt not to increase their hours alongside other market participants, OCC may eventually have to expand its network of settlement bank relationships to include international

banks, to support settlement cycles across time zones. Alternatively, OCC may also choose to leverage DLT tools as a means of settlement and collateral movement.

Accordingly, OCC would manage margin and collateral flows during the banking hours of the European Union ("EU") or Asia Pacific region ("APAC"). In parallel, OCC may need to expand and globalize collateral operations to support this transition and may consider permitting the posting of collateral in approved correspondent banking accounts in the EU or APAC. This would require investment in collateral processing and operations, which may also require expanding partnerships with global custodians.

OCC would also have to coordinate with CME and NSCC and determine whether adjustments may be necessary to the 'OCC-CME Cross-Margining Agreement' and the 'NSCC Accord,' to ensure interoperability and joint risk management in extended trading hours.

To support cross-margining in a near-continuous trading environment, OCC may adopt aligned margin cycles with other CCPs in the extended windows as well, and may need to codify procedures in the event of a default of a common CM. OCC may need to establish other new agreements with select peers to support this transition for U.S. listed options as well.

OCC, like other CCPs, regularly assesses whether its financial resources are sufficient. Stress testing models and procedures may need to be adapted to reflect the risks associated with extended trading hours, considering scenarios like reduced liquidity across the overnight window, or larger price gaps, for example. Real-time parameters based on available market data, that consider the unique liquidity and market structure dynamics at different dayparts of the 22-5 trading model, would enhance accuracy and responsiveness.

Similarly, in near-continuous trading environments, the stress parameters used to size and allocate the default fund may need to be adjusted to reflect differences in liquidity across dayparts, intraday portfolio fluctuations, and collateral positioning and eligibility, for example. To preserve financial resources sufficiency across extended trading hours, liquidity add-ons may need to be specific to either the traditional trading session or the extended trading session.

Furthermore, both regulatory and internal reporting, particularly that generated during overnight windows where traditionally no trading was happening in parallel to production, would need to be recalibrated or segmented into rolling processes that align with near-continuous trading.

For example, some of the first reporting that may have to evolve to support the transition to a near-continuous trading environment is end-of-day margin

and collateral reports, daily stress testing results and liquidity monitoring profiles, risk exposures, and trade and position data.

OCC may have to work in tandem with regulators to redefine when daily reports are captured and submitted, how additional intraday margin and settlement cycles may increase reporting flows, and whether rolling, real-time reporting would have to be adopted. Governance and escalation frameworks may need to be adjusted in parallel, where key risk personnel would need to be 'on-call' or 'on-shift' throughout the overnight window, to run and review reporting production.

Moreover, OCC's Clearing Members also depend on this reporting for their own downstream reporting needs, such as with daily capital reporting, which too follow legacy market practice and schedules. OCC may also need to revise its rules, obtain regulatory approvals and file advanced notices, where necessary, to account for the changes needed to support extended trading.

For example, as part of possibly offering more extended trading hours for more products and participants, OCC is working to establish new rules, subject to regulatory approval, that would define both traditional as well as extended trading hours, and establish distinct dayparts aligned with those hours. These rules would further define the specific products that would be allowed to trade outside of traditional trading hours.

OCC Priorities to Support 22-5 Trading

- Update rules to define traditional and extended trading hours
- Enhance stress testing and margin collection practices
- Move business processes to event-driven workflows
- Increase human capital and expand operational coverage
- Explore multiple daily windows for settlement and movement of collateral
- Evaluate DLT and tokenization tools
- Recalibrate regulatory and internal reporting
- Evaluate CCP cross-margin agreements

Extending Further to a Fully Continuous 24-7 Trading Environment

Transitioning to a fully continuous 24-7 trading environment would be a significantly larger leap and introduce distinct complexities as compared to 22-5 trading. Both the markets and OCC would, however, be able to build upon the experience and lessons learned from operating in a near-continuous 22-5 trading environment.

The evolution to 24-7 would need to allow for appropriate time to both address the heightened risks associated with losing weekend downtime, as well as with implementing more automated and real-time technology and risk management solutions. Some market participants, particularly in the digital assets and cryptocurrency space, point to disintermediated tools, such as integration of DLT, as a step in the direction of continuous trading, clearing, and settlement.

Indeed, collateral tokenization play a significant role in allowing CMs to transfer and pledge assets instantly in extended trading hours, when legacy banking institutions may yet not be operating.

CCPs would lose traditional weekend maintenance windows in a 24-7 trading environment, where operational infrastructure would have to support rolling, updates, and 'hot-hot' system environments facilitated by scalable cloud architecture with zero downtime maintenance procedures.

Expanded regulatory coordination and rulemaking would be critical to transition to a full 24-7 trading environment as well. International regulatory coordination would also be essential to prevent fragmentation and, as markets never close, to address cross-border issues that could arise at any hour of any day.

Conclusion

The transition to near-continuous and continuous trading environments represents a fundamental shift in global financial markets for traditional assets. While expanded trading offers benefits and opportunities in terms of access, it also requires substantial adjustments throughout financial markets and at CCPs themselves. OCC and all market participants would need to collaborate to accommodate and support extended trading hours. This paper attempts to set forth some of the issues that must be addressed at both the overall market level and at OCC to achieve 22-5 or 24-7 trading.

Endnotes

- 1 As described further, during ETH, OCC provides clearing services for certain index options and index futures during overnight and early morning hours.
- 2 While there is no formal definition, traditional financial markets are commonly the established, regulated marketplaces where financial instruments are traded, including stock markets, bond markets, foreign exchange markets, and derivatives markets.
- 3 [Nasdaq Announcement](#), [CBOE Announcement](#), and [ICE Announcement](#).
- 4 [Statement on the Commission's Approval of the 24X National Exchange Application for Registration as a National Securities Exchange](#).
- 5 Robinhood offers pre-market (7 a.m. to 9:30 a.m. ET) and after-hours (4 p.m. to 8 p.m. ET) trading for securities, and limit orders are the only order type permitted during these sessions. Similarly for Charles Schwab.
- 6 [Nodal Clear Announces Clearing Support for 24x7 Trading on Coinbase Derivatives Exchange](#)
- 7 [CME Globex Reference Guide](#)
- 8 [DTCC's NSCC to Increase Clearing Hours to Support Extended Trading](#)
- 9 [Canadian Derivatives Clearing Corporation Operations Manual](#)
- 10 [Eurex outlines the uses and benefits of DLT technology for the operations of CCPs](#).
- 11 [McKinsey & Company on tokenization and the use of stablecoins in payments infrastructure](#).
- 12 "Guiding and Establishing National Innovation for U.S. Stablecoins Act" or the "GENIUS Act".
- 13 [The Securities Information Processors Move Toward 24-Hour Availability](#), Pending SEC Approval
- 14 [OCC Comment Letter](#) on FRB Proposal to Expand Fedwire Funds Service and National Settlement Service Operating Hours.
- 15 Blonien, Patrick, and Ober, Alexander. "Is 24/7 Trading Better?" (2024).
- 16 Source: 3rd Shift Market Operations at OCC.
- 17 Goedker, Katrin and Odean, Terrance and Smeets, Paul. "Disposed to be Overconfident." (2025)
- 18 Legal frameworks may also need to codify formal definitions of settlement finality for transactions processed at specific dayparts across the near-continuous or continuous trading session, particularly in the context of DLT-based settlements.

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