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# THE EVOLUTION OF ETF CLEARING: OPPORTUNITIES AHEAD



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## EXECUTIVE SUMMARY

**The Depository Trust & Clearing Corporation has worked diligently over the past 20+ years to innovate and modernize its range of ETF-centric products and services.**

On January 22, 1993, DTCC cleared and settled the first trades placed on ETFs. Fast-forward nearly 25 years later, the ETF industry has matured both in terms of product availability and assets under management with the latter continuing to demonstrate rapid growth year over year. Even as the universe of exchange-traded products expands and becomes ever more complex, central counterparty (CCP) clearing of ETFs continues to offer the same essential benefits it provided in 1993; most critically, centralization, standardization, risk reduction and operational efficiency.

Today, ETFs provide investors with opportunities to gain exposure to virtually every asset class and every region of the globe through both actively managed strategies and traditional passive index products. As the ETF market has matured so has the infrastructure underpinning the market evolved. Through its NSCC subsidiary, DTCC today provides straight through processing for all domestic-listed ETFs, including real-time clearance and guaranteed settlement on a net basis within its Continuous Net Settlement (CNS) platform.

In 2016, NSCC provided clearance and settlement on equities, bonds, and ETF transactions of approximately \$243 trillion total pre-net value, inclusive of all sides processed; thereby greatly simplifying client's operational burden, and reducing risk for the industry. NSCC's portfolio service provides daily delivery of the Portfolio Composition File containing critical creation and redemption basket data for all domestic-listed ETFs to ETF Authorized Participants on T-1. Through its fully automated ETF primary market clearing service, NSCC currently provides clearance and settlement on nearly 60% of all domestic-listed ETFs for creation and redemption transactions. In 2016, NSCC cleared approximately \$9.6 trillion total pre-net value for Creation / Redemption activity, inclusive of all sides processed.<sup>1</sup>

DTCC believes many opportunities lie ahead to expand the role of CCP clearing in the ETF marketplace. This concept paper outlines several proposed initiatives and their risk-reducing benefits to the marketplace including:

- Expanded functionality for Sponsors and Agents daily basket reporting via NSCC's Portfolio Service and the Portfolio Composition File product (PCF)
- Guaranteed, fully in-kind CCP clearing for baskets containing mixed assets, including both fixed income and global equity baskets
- Expanded central clearing of secondary market ETF trades executed on global exchanges

Through these initiatives, DTCC estimates greater than 30% of ETF trading activity currently settled bilaterally could become eligible for the benefits of CCP clearing. These initiatives are consistent with the values expressed in DTCC's mission statement: to deliver the world's most resilient, secure, and efficient post-trade infrastructure for our clients. DTCC remains fully committed to clients and supporting the continuing growth and evolution of the ETF marketplace.

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<sup>1</sup> Reported total values for 2016 are estimates based on average daily values processed by NSCC during the period, inclusive of all sides processed.

# A SINGLE, CENTRALIZED MARKET INFRASTRUCTURE SUPPORTING ETF CLEARING

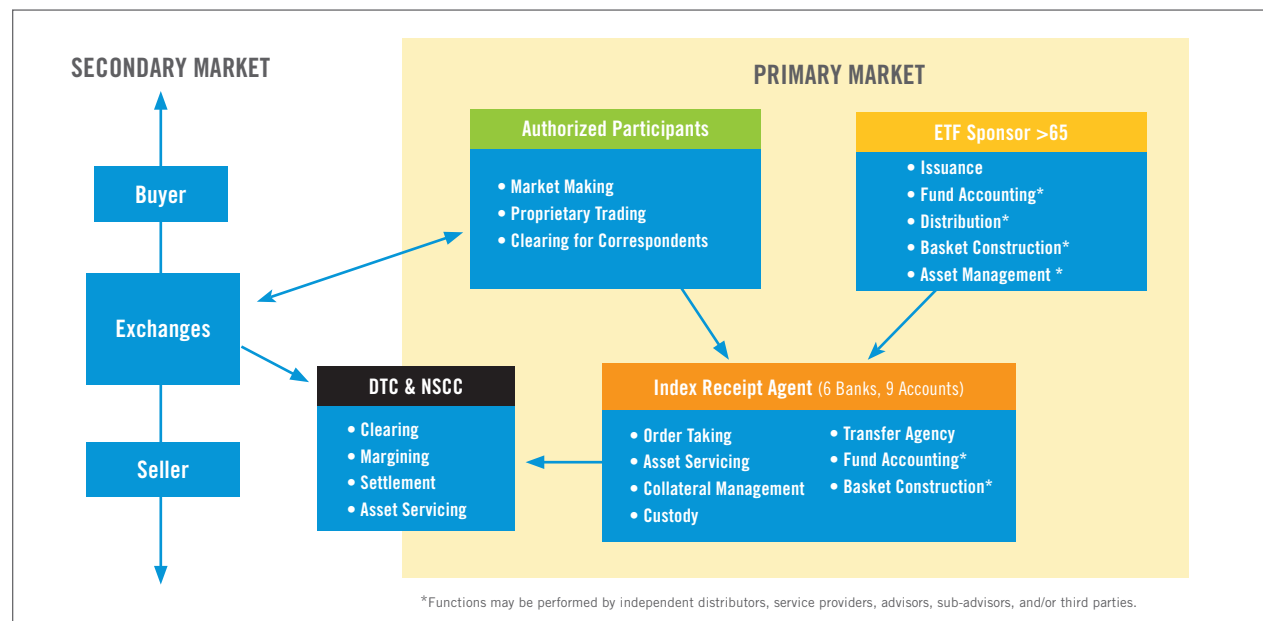
## ETF Primary vs. Secondary Market Clearing

Since the first listing of Exchange Traded Funds (ETFs) in the early 1990s, the National Securities Clearing Corporation (NSCC) and The Depository Trust Company (DTC) have remained at the heart of the critical industry infrastructure underpinning a growing ETF marketplace.

Domestic-listed ETFs with primary listings in the U.S. are governed pursuant to the Securities Act of 1933, Securities Exchange Act of 1934, and/or the Investment Company Act of 1940. They are typically listed on the major U.S. exchanges, currently BATS, NASDAQ and NYSE, in many structures subject to Exchange rules, including via exemptive order granted by the U.S. Securities and Exchange Commission (SEC) under the Investment Company Act of 1940.

Among all securities types, ETFs are especially unique in structure. Broker/dealers that have agreements with ETF distributors – known as authorized participants (APs) – are allowed to create or redeem shares of the ETF on an intraday basis. ETF sponsors may engage in-house or third party service providers to support necessary functions for the listing, maintenance, and trading of the security, including those services provided by independent distributors, custodial banks, and transfer agency services. Custodial banks providing multiple services are often referred to formally as Index Receipt Agents or simply ETF Agents.

### ETF Market Structure



## Brief History of ETF Clearing

**The unprecedented growth in U.S. ETF listings and assets under management (AUM) continues. As of September 2017, there were around 2,000 listed products and greater than \$3 trillion in AUM in U.S.-listed ETFs according to the Investment Company Institute (ICI).<sup>2</sup>**

ETF products have evolved since their introduction in the early 1990s. The earliest-to-market ETF products followed the major indices, such as the S&P 500 and the Russell 1000. ETF strategies quickly expanded to tracking reference indices based on cap-weightings (e.g. small cap, large cap), sector, (e.g. technology, healthcare), cap-weighted sectors, (e.g. small cap technology), and cap-weighted styles (e.g. small cap growth, large cap value). By the mid-2000s, fixed income portfolios, leveraged products, and commodity funds had become ubiquitous.

In recent years, actively managed ETFs, Smart Beta products, and factor-based ETFs have come to dominate new listings. Today, fixed income ETF portfolios and ETFs offering global exposure are continuing to grow in popularity in terms of new listings and investor interest: according to the ICI, global ETFs held nearly \$700 Billion in AUM as of July 2017, an increase of \$200 Billion in AUM from the year prior. Fixed income ETFs held a little more than \$500 Billion AUM in July 2017.<sup>3</sup>

The original create/redeem clearing process developed by NSCC in the early 1990s – concurrent with the first ETFs on the market – has always been a core part of the ETF market structure. NSCC clears virtually all secondary market trades in U.S.-listed ETFs regardless of their composition, including actively-managed exchange traded products. Nearly 60% of ETFs are also eligible for NSCC's automated primary market clearing process for creation and redemption activity. This includes settlement of the ETF, its underlying component securities, and cash value(s) within NSCC's Continuous Net Settlement (CNS) platform with full support for both in-kind and cash only creation/redemptions.

DTCC has continued to innovate, evolve and modernize its range of ETF-centric products and services based on feedback from industry stakeholders. As the universe of exchange traded products expands and becomes ever more complex, central counterparty (CCP) clearing of ETFs continues to offer the same essential benefits to ETF sponsors, distributors, Agents, and APs, most critically, centralization, standardization, risk reduction, and operational efficiency.

<sup>2</sup> Investment Company Institute: ETF Assets and Net Issuance, August 2017. [https://www.ici.org/research/stats/etf/etfs\\_08\\_17](https://www.ici.org/research/stats/etf/etfs_08_17)

<sup>3</sup> Investment Company Institute: ETF Assets and Net Issuance, August 2017. [https://www.ici.org/research/stats/etf/etfs\\_08\\_17](https://www.ici.org/research/stats/etf/etfs_08_17)

## ADDING VALUE TO THE MARKETPLACE: CCP CLEARING FOR ETFs

### ETF Portfolio Composition Reporting (Trade Date -1)

**On the day before Trade Date (T-1), NSCC's portfolio service product (PCF) allows ETF sponsors, via their Agent, to publish ETF basket compositions to APs, market makers, exchanges, and other market participants.**

This data is used to inform trading strategies, enable intraday valuation, and serves as the gold copy, critical for post-trade reconciliation of creation and redemption activity on eligible ETFs. Clients may receive immediate access to supplemental updates received from sponsors and Agents on Trade Date (T), including Net Asset Value (NAV) restatements, error corrections, or basket revisions via multiple near real-time

outputs, including via the ETF Browser on the NSCC Portal, or via subscription to the recently introduced near real-time supplemental data file.

#### Summary of Key Benefits: ETF Portfolio Composition Reporting

Centralized, industry standard reporting of creation and redemption baskets on T-1

Flexibility to publish and/or receive updates, corrections, or NAV restatements on trade date, including optional near-real time supplemental data file output

Convenient user interface available on DTCC Portal for portfolio subscription management and alert notifications for updates published on trade date

Download portfolio compositions directly from DTCC Portal or receive via data file

All PCF data files identify the cash amount in each portfolio, NAV, component securities, share weightings, and critical security eligibility reference data including the creation unit size, settlement disposition, and other relevant information. Trades eligible for cash creates and redeems show a cash creation amount on the portfolio composition file.

### ETF Creation and Redemption Clearing (on Trade Date)

**The automated ETF creation and redemption service is available to any AP that is also a full-service NSCC client. The ETF Sponsor and Agent jointly determine whether the ETF will be eligible for clearance via the service based on a number of factors, including the eligibility of the securities contained within the ETF basket.**

ETF primary market orders are consummated through a bilateral agreement process between the fund's distributor and the AP. The match is typically initiated by the AP via a platform offered by the fund, its distributor, or ETF Agent that services the ETF. Agents may provide an 'order taking' service for acceptance of these orders. In the evening on Trade Date (T), the order instructions are delivered to NSCC by ETF Agents on a fully locked-in basis.



Within its automated ETF service, NSCC references the T-1 basket for every order instruction received and assigns value to the ETF and underlying components via the ‘bursting’ process. Receive and deliver instructions are then passed to NSCC’s Universal Trade Capture (UTC) system, validated, and guaranteed. NSCC transmits contracts and other reports to both Agents and APs. Eligible securities settlements are forwarded to NSCC’s CNS system. Creation and redemption transaction fees are also included on the received instructions. These are reflected separately in ETF Agent’s and Authorized Participants end of day settlement figures.

## ETF Primary and Secondary Market Net Settlement

**NSCC’s Continuous Net Settlement (CNS) system accepts trade inputs that carry the same trade and nets them to one position per security (long or short) per participant.**

CNS is an ongoing process; it perpetually nets the current day’s settling trades with the prior day’s closing positions, producing new long or short positions per security per participant per day. As a result, a client’s net position is the difference between their long and short positions in a given security due to settle that day and the previous day’s fail-to-settle position. CNS positions are ultimately passed against the client’s designated DTC positions, and available securities are allocated through book-entry movements at DTC.

## Benefits of ETF Primary and Secondary Market Offsets to NSCC Clients

Typically, NSCC’s trade guarantee will attach to CNS transactions that reach point of validation. Trades ineligible for CNS either settle trade-for-trade or are included in NSCC’s multi-lateral net balance order process. CNS netting of ETF

### Summary of Key Benefits: ETF Creation and Redemption Clearing

Support for hybrid portfolios (both NSCC-eligible and cash substitution for Non-NSCC eligible components)

Allow portfolios to be customized on the create and redeem order instruction

Report Standing Settlement Instructions (SSI) on Non-DTC settling components to simplify global CSD bilateral settlements

Report create and redeem data on Universal Trade Capture (UTC) contracts

### Summary of Key Benefits: ETF Settlements in CNS

Settlement through CNS is guaranteed. NSCC becomes the counterparty to each settlement obligation

Closing fail positions are carried forward and marked to market daily and re-netted with new CNS securities transactions

Operational risk is reduced by lessening the need for securities movements

Multilateral netting provides increased liquidity

receipts and deliveries can reduce the costs and operational risk associated with transactions by reducing the number of securities movements required for settlement on any given day. NSCC also reduces the total value of obligations requiring financial settlement, thereby improving the liquidity positions of its clients.



## SUPPORT FOR AN EVOLVING ETF MARKETPLACE

### Simplification, Standardization, and Enhanced Support for Global ETFs

**In 2014, NSCC completed a multi-year modernization of all ETF clearing products, introducing the ETF Enhanced Portfolio Composition File (PCF) and the ETF Browser on the DTCC Portal.**

ETF Agents, APs, sponsors, exchanges, buy-side firms, and others were able to receive all U.S.-listed ETFs creation and redemption baskets, including equity, foreign equity, fixed income, and commodity baskets, in one standard – yet flexible – format. Subscribers are now able to receive a wide array of identifiers for globally listed securities, derivatives, and traded options. Most critically, this modernization provided ETF sponsors and Agents the ability to push critical updates, corrections or restatements on basket compositions and valuation to all subscribers intraday on Trade Date – known as ‘Supplemental’ – which in 2015 was expanded to include the first centralized near real-time data file output.

In response to industry requests, the ETF Create/Redeem trade capture process was enhanced to allow additional customization of creation and redemptions order instructions versus the reference basket on trade date, allowing adjustment of the component compositions and cash values on the order instruction. This introduced flexibility for central clearing of baskets for APs facing restrictions, complementing the existing custom basket process. Further enhancements included reporting of security eligibility at the component level and cash substitution options.

### NSCC's Accelerated Trade Guarantee and T+2 Settlement

**NSCC recently delivered upon two major initiatives which, in tandem, reduce industry risks while improving client's liquidity position.**

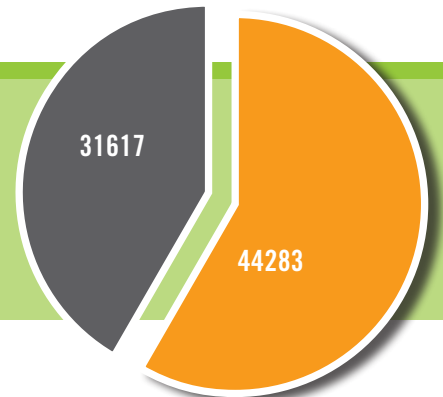
In April 2017, NSCC rolled out the Accelerated Trade Guarantee (ATG), moving the timing of application of the guarantee from midnight of T+1 back to the point of validation, removing the delay before NSCC as central counterparty (CCP) could step between counterparties, assume the buyer's credit risk and the seller's delivery risk in case of a client default.

In September 2017, the industry successfully converted to T+2 settlement, which enables a decline in buy-side counterparty exposure, a decline in broker-to-broker counterparty risk, improved client liquidity, better alignment of the domestic settlement cycle with other geographies, and other important benefits. While all NSCC clients benefit from these initiatives, ETF sponsors and distributors also enjoy the same as the ultimate counterparties for creation and redemption activity. The deployment of these key initiatives also lay the foundation for future expansion of NSCC's automated ETF creation and redemption process.

## TOTAL CREATIONS AND REDEMPTIONS CLEARED IN 2016

■ Total Create

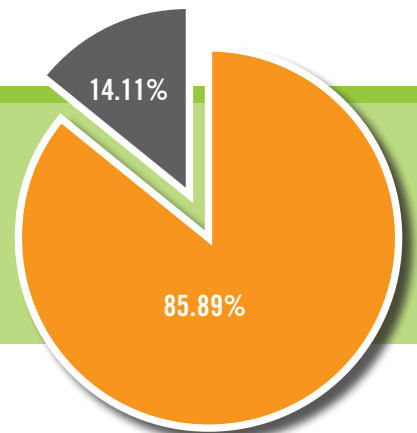
■ Total Redeem



## IN-KIND VS. CASH CREATIONS IN 2016

■ % of In-Kind Creates

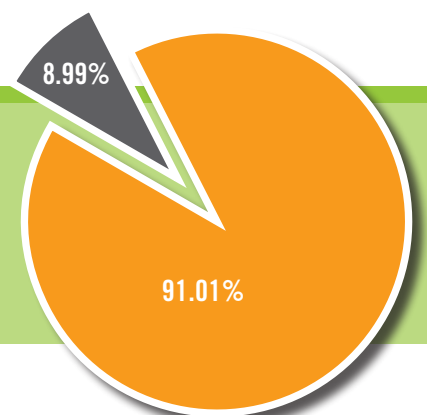
■ % of Cash Only Creates



## IN-KIND VS. CASH REDEMPTIONS IN 2016

■ % of In-Kind Redeem

■ % of Cash Only Redeems



“In-kind” creation or redemptions refer to NSCC’s clearance and settlement of orders where a component-based basket is exchanged for ETF shares. Cash creation or redemptions refer to NSCC’s clearance and settlement of orders placed versus a basket where a reported cash value represents the total value of the underlying component securities.

## Risk Mitigation and Near Real-Time Support

In early 2015, NSCC's ETF Industry Working Group was organized, consisting of more than 60 individuals representing 27 firms including every ETF Index Receipt Agent and 20 APs.

In these forums, the need was recognized for greater flexibility in the processing of as/of and reversing creation and redemption activity within the CNS platform. When invalid component weightings or incorrectly calculated cash values are included on the submission of the order instruction on T, ETF Agents must submit as/of reversals and corrections in the evening of T+1. This is after the point which the Agent and AP must satisfy their daily NSCC Clearing Fund requirement.

Subject to regulatory approval, NSCC is planning to release a suite of enhancements in January 2018 to address these needs. Earlier in 2017, NSCC unveiled the "ETF Near Real-Time Create/Redeem Enhancements and Controls Customer Business Requirements" which remains available in the DTCC Equity Clearing – ETF Learning Center. The document details new functionality intended to provide Agents with the flexibility to submit as/of and reversal creation and redemption activity through the introduction of additional intraday cycles. NSCC will expand trade capture from its existing end of day batch to continuous, near real-time processing, open from 12:30 AM through 11:30 PM daily.

With this next release, NSCC will also introduce an automated reasonability check that will apply to all creation or redemption submissions on clearing-eligible ETFs. Contracts that exceed established thresholds versus the closing price of the ETF for the specified trade date will be assigned a pended status, awaiting verification with the submitting Agent for reinstatement. This additional set of controls will provide an added layer of protection to transacting parties each evening on Trade Date (T), giving the submitting Agent the opportunity to correct errors before they occur without unnecessarily delaying overnight reconciliation processes within Agents and APs. Industry testing for these enhancements will begin in late October of 2017.

### Summary of Key Benefits: ETF Near Real-Time Clearing and Controls

Introduces three near-continuous cycles for as/of and correction trade capture each business day

Empowers ETF Agents to offset errors and corrections earlier in the trading day within the CNS platform, potentially minimizing the impact of errors to sponsors and APs

New threshold reasonability check provides an added layer of protection for ETF Agents and APs, flagging order instructions with off the market values for reconciliation directly with the submitting ETF Agent prior to validation

## FLEXIBLE STANDARDS AND INDUSTRY SOLUTIONS

### Challenges Ahead for ETF Sponsors and Custodians

**As the industry continues to grow in size and complexity, new challenges lie ahead for industry participants. ETF sponsors are facing new regulatory demands, including the imminent liquidity risk management and reporting requirements applicable to 1940 Act funds under Rule 22e, N-PORT, and N-CEN.**

These may apply to ETF's which are not fully supported for in-kind exchange. Other industry challenges include clearing obstacles and obtaining the necessary approvals to fully meet the demand for global ETF strategies, fixed income products, and new actively managed ETF structures. DTCC is working together with exchanges, sponsors, distributors, Agents, and APs to address these new challenges, developing solutions to adapt its central clearing infrastructure to fully support in-kind exchanges for all asset classes, including fixed income portfolios, and globally listed securities.

### Expanded Portfolio Basket Reporting

**NSCC expects to define industry requirements introducing additional functionality for its PCF product by 2019.**

With this initiative, Sponsors and Agents would be empowered with expanded flexibility necessary to enable multiple published baskets per ETF marked eligible for creation/redemption clearing and settlement via NSCC. New distribution options would allow ETF Agents to instruct NSCC to publish multiple baskets to APs, exchanges, and other subscribers containing clear identifiers for each basket-published. These include labels clearly depicting each baskets usage – including baskets published for pricing, trading, or rebalancing on a daily basis. Importantly, all Sponsors and Agents would retain the option to publish baskets directly to individual AP's facing beneficial ownership restrictions upon introduction of this expanded functionality. Further enhancements are expected to enable additional reporting options for cash component values, a breakout of variable fees, and reporting of fractional component positions on DTC-ineligible securities such as equity derivatives.

Critically, NSCC would introduce full support for the daily reporting of the net asset value (NAV) accurate to six decimal places. New basket delivery and subscription options are expected to supplement subscriber's current options for receipt of compositions, including expanded supplemental reporting for baskets published intraday on Trade Date (T).

## Expanded Clearing for CNS-Eligible Fixed Income Securities

**For many years, NSCC has fully supported secondary market clearing of inter-dealer, syndicate takedown, and other trades in fixed income securities within the CNS platform, including corporate paper and municipal securities.**

NSCC has traditionally supported the clearing of ETF creation and redemption of fixed income portfolios via cash-only baskets; however, Agents and APs are seeking new ways to utilize NSCC's enhanced instruction functionality to customize order instructions and settle eligible fixed income component securities within CNS.

NSCC will be working to further enhance its process to fully support in-kind exchanges for fixed income baskets through enhancements to assign the value of accrued interest at the component securities level, reducing the need for cash substitution within eligible baskets, and reducing reconciliation at settlement for APs. Potential enhancements include guaranteed balance order processing for CNS ineligible components, expanded reporting for both the ETF PCF component record and creation/redemption clearing records, and enriched UTC contract output to include the value of accrued interest.

### Summary of Key Benefits: Expanded Clearing for Fixed Income Securities Eligible for DTC Settlement and Basket Reporting

Fully in-kind exchanges via NSCC may address tax concerns related to the usage of cash baskets when creating and redeeming ETFs<sup>4</sup>

Fully in-kind exchanges via NSCC may provide relief to ETF sponsors for reporting requirements under 22E, N-PORT, and N-CEN

Reduced cash substitution for ineligible basket components reduces post-trade reconciliation

Enhancements will allow sponsors and Agents to publish multiple baskets to all PCF subscribers with labels identifying basket compositions (e.g. rebalancing)

Enhancements will enable further transparency through new reporting functionality on basket compositions including variable fees and fractional positions

Enhancements will enable the sponsor and Agent to publish NAV accurate to six decimals

<sup>4</sup> The information contained herein is not tax advice and is not intended to be a substitute for obtaining tax advice from an appropriate professional adviser. You should consult your own tax advisor regarding the applicability of any federal, state, local and non-U.S. tax laws.

## GLOBAL ETF PRIMARY MARKET CLEARING

Today the demand for global equity ETF portfolios is growing as measured in terms of trading activity, assets under management, and new listings. Unlike traditional domestic ETF portfolios that are eligible for NSCC's automated clearing process and CNS, there exists great operational complexity in the settlement of global ETFs in the primary marketplace.

While ETF Agents have great expertise in navigating market-specific requirements, global settlement cycles, foreign exchange, and otherwise ensuring orderly settlements of the ETF and its underlying components, ETF sponsors and APs have called upon NSCC to propose solutions to extend the benefits of its existing domestic automated create and redeem clearing process to global ETFs.

In addition to the operational complexity of managing bilateral settlements, NSCC has also received feedback that the collateral requirements to facilitate creation and redemption on global ETF portfolios limit the effectiveness of firms engaged in trading activity for these funds. Although global portfolio components are required to settle within central securities depositories (CSDs) abroad, the contracts to receive and deliver these global securities result from primary market orders on domestic-listed ETFs which are already eligible for settlement within the CNS platform today. For these reasons, industry representatives have requested that NSCC develop workflows that could potentially enable the extension of its trade guarantee to domestic-listed global ETF portfolios and provide the benefits of centralized margining and offsets through settlement date.

### Summary of Key Benefits: Global ETF Primary Market Clearing

A centralized, standard trade capture and clearance pipeline for all domestic-listed ETFs with global equity compositions

Solution will be portable to any global marketplace, including those markets with prefunding requirements as early as T-1

Orders are guaranteed by NSCC through settlement date, potentially providing balance sheet relief to APs and contributing to improvement in APs intraday liquidity position

Reduces the operational burden for ETF Agents and APs, reducing cost and operational risk

A global equity clearing model that incorporates central fail management for Agents and AP's leveraging the NSCC Obligation Warehouse (OW)

Provisions to ensure the efficient movement of collateral between the AP and Agent on failed component deliveries for creation orders process via NSCC

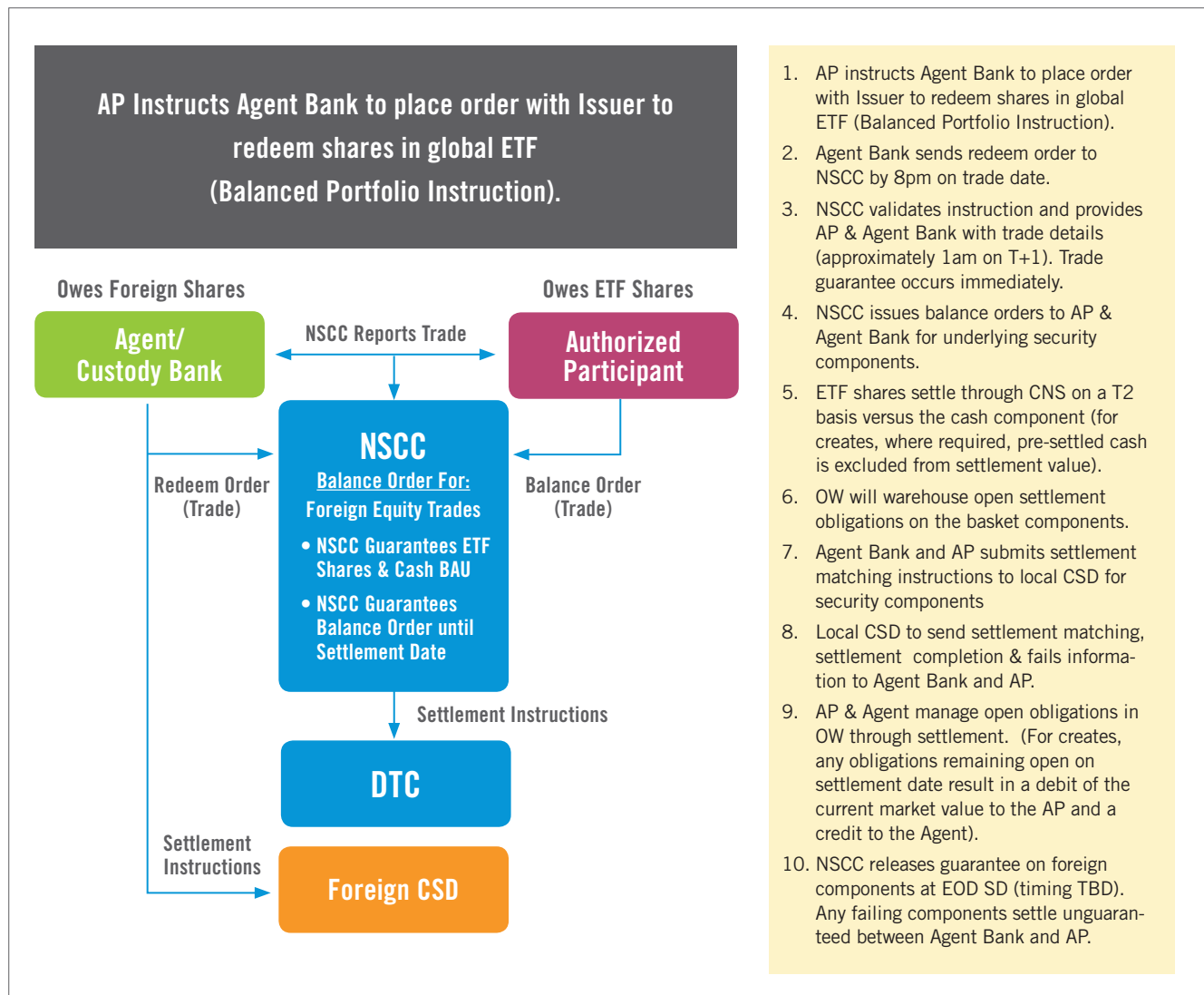
By integrating the existing ETF trade capture model with NSCC's existing guaranteed balance order process, Agents and APs can gain the benefit of the NSCC trade guarantee applied to virtually every ETF portfolio,

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including those containing globally listed securities. ETF shares created or redeemed will settle within the CNS platform while settlement matching and delivery of the global securities and certain cash values will be facilitated by the ETF Agent and AP within the local CSD in accordance with contract obligations issued by NSCC.

Centralized risk margining and net settlement on the ETF and eligible underlying components could provide APs with critical balance sheet relief, significantly reducing the collateral necessary to transact for these baskets, and contributing to improvement in client's intraday liquidity position. Offsets for margining and settlement gained through this process will provide further relief to clients, especially for those global ETF baskets where settlement cycles are fully aligned with the U.S. marketplace.

### Process Flow for Proposed Global ETF Primary Market Clearing:





## EXPANDED ETF PRIMARY MARKET CLEARING FOR FED-ELIGIBLE FIXED INCOME AND MIXED ASSETS

Today, many fixed income portfolios include a mix of components eligible for CNS, DTC, and Fed-eligible settlements, including agencies, and treasury securities.

Leveraging the resources and expertise of fixed income clearing professionals within DTCC, including products offered through DTCC subsidiaries, the Fixed Income Clearing Corporation (FICC) and DTCC Solutions, DTCC is currently engaged in industry outreach to develop new solutions to expand ETF primary market clearing to all component asset classes.

Beginning with the model proposed for global equity ETF primary market clearing and then extending it to include communication of settlement matching instructions via DTCC Solutions' Match to Instruct (M2i), appending standing settlement instructions (SSI) to balance order tickets, and offering centralized fail management via the Obligation Warehouse (OW), ETF baskets with Fed-eligible and mixed assets would become eligible for guaranteed settlement via NSCC.

The following model depicts further enhancements to the global equity model that could potentially apply to primary market clearing of domestic-listed ETFs holding Fed-eligible and/or mixed assets.

### Summary of Key Benefits: ETF Primary Market Clearing for Fed-eligible and Mixed Assets

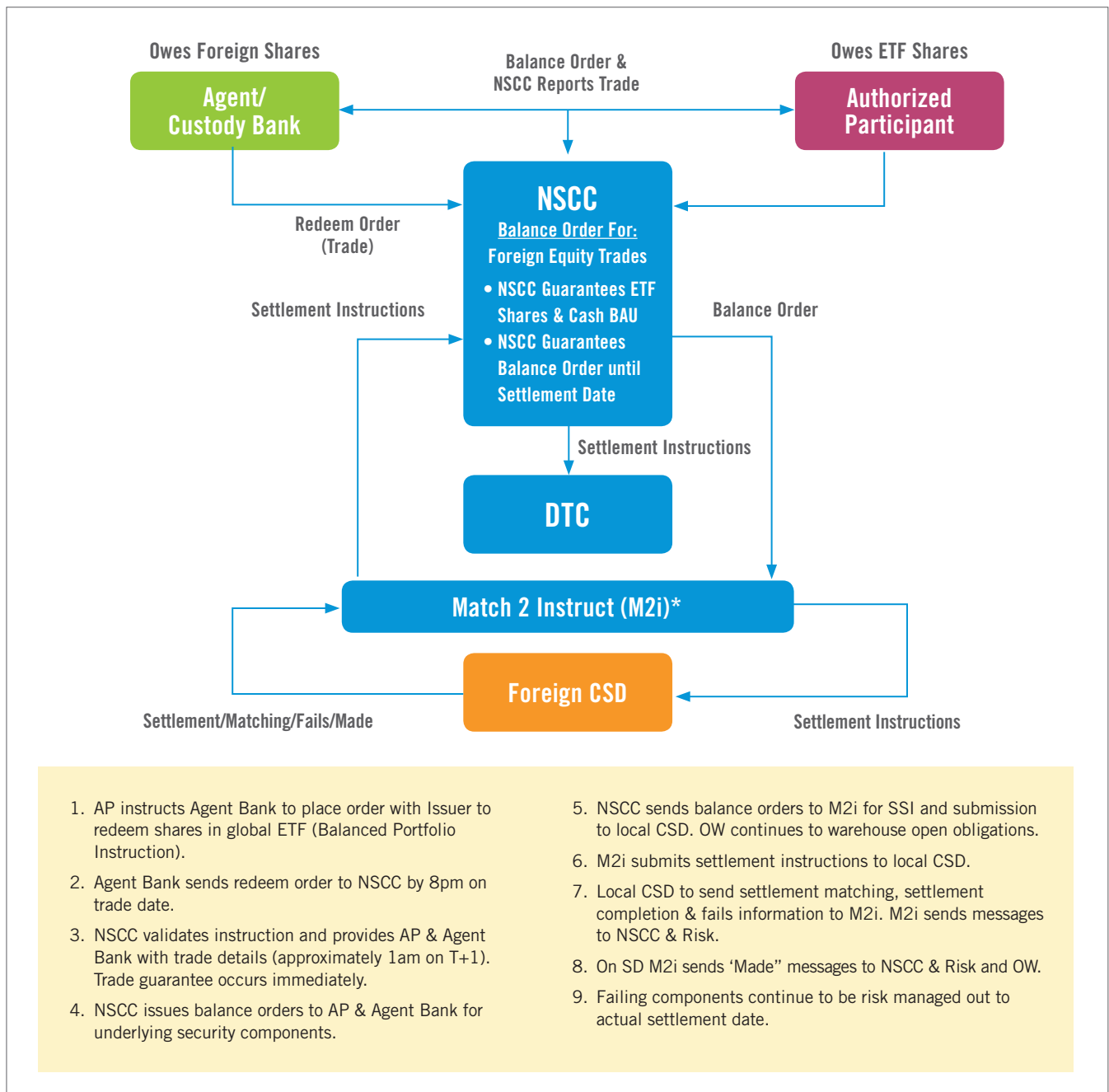
A centralized, standard trade capture and clearance pipeline for all domestic-listed ETFs with Fed-eligible and mixed assets

Orders are guaranteed by NSCC through settlement date, potentially providing balance sheet relief to APs and contributing to improvement in APs intraday liquidity position

Reduces the operational burden for ETF Agents and APs, reducing cost and operational risk.

## THE EVOLUTION OF ETF CLEARING: OPPORTUNITIES AHEAD

### Process Flow for Proposed for Expanding ETF Creation/Redemption Clearing to Fed-eligible Fixed Income and Mixed Assets:



## GLOBAL EXCHANGE SECONDARY MARKET CLEARING

**Subject to regulatory approval, NSCC is further developing solutions to support secondary market clearing of ETFs on a global scale. Through its global exchange initiative, NSCC is working with exchange partners and stakeholders to develop clearing options for its existing clients actively trading U.S. domestic listed securities in global venues.**

NSCC full-service clients active in venues trading during local market hours outside of the U.S. will gain the benefit of the NSCC trade guarantee, offsets for margining, and net settlement within their existing account structure on domestic listed ETFs and other securities through an established link between the global exchange and NSCC.

Clients active in trading ETFs with global portfolios will also gain the benefit of clearing offsets on the ETFs while active in foreign ordinary shares trading locally during local market hours. The initiative will incorporate all of NSCC's traditional processing, including UTC contract output, and settlement within the existing CNS platform.

### Other Considerations

DTCC, NSCC, and DTCC Solutions continue to develop new products and services for increasingly global markets. Assets under management (AUM) in global ETFs have not yet exceeded those for U.S. listed products; however, this spread continues to narrow while the number of ex-U.S.-listed ETFs exceeded those listed domestically several years ago.

Further opportunities exist to adapt NSCC's existing Enhanced Portfolio Composition File (PCF) product to globally listed ETFs, including the Undertakings for the Collective Investment of Transferable Securities (UCITS), products listed in Europe, Canadian-listed ETFs, and other similar structures listed globally. Allowing ETF sponsors and Agents to report these portfolio holdings to APs, exchanges, and NSCC's other existing subscriber base leveraging its existing platform may enable market efficiencies in the future.

As a whole, DTCC remains fully committed to supporting the continuing growth of the ETF marketplace, the businesses of its clients, while delivering the traditional benefits of CCP clearing: centralization, standardization, risk reduction, and operational efficiency. These values are fully expressed in DTCC's mission, to deliver the world's most resilient, secure, and efficient post-trade infrastructure for our clients.

