

Foreword

The world continues its inevitable advance towards a digital, always-on economic model. In order to support this new reality, it is important to thoroughly examine the implications of the changes required to our payment systems.

It is clear that round-the-clock availability of real-time gross settlement systems (RTGS) provides the foundation to deliver extended flexibility to consumers and businesses for effecting all types of payments transactions, whether domestic or cross-border. Moreover, continuous availability of central bank RTGS gives rise to a range of broader benefits. Such a change enables the introduction of additional settlement cycles in ancillary payment systems (such as ACH and Cards), and in the future can serve as the bedrock for FX, Debt, and Equities markets to operate with expanded hours. Further, this provides a foundation for enhanced innovation across the economy, as FinTechs, other payment systems, and broader market participants leverage the foundation of an 'always on' RTGS to settle safely and efficiently.

The ability to make and settle payments up to 24x7 (Expanded Hours) every day of the year is not only a significant private-sector objective but is also an important public policy goal. While Expanded Hours access is addressed for consumers and participants in retail payments by systems such as the upcoming FedNowSM Service, expanding the operating hours of large-value payment systems such as the Fedwire[®] Funds Service further supports this goal by broadening opportunities for institutional (e.g., corporates and financial institutions) and public sector (e.g., central banks and government entities) clients as well.¹ This capability will enhance the credentials of the U.S. Dollar as the settlement currency of choice within the global digital economy as institutional transactions move towards becoming 24x7.

In early 2020, the Payments Risk Committee (PRC) initiated a study of the operational, risk, and policy considerations the Reserve Banks and participants of the Fedwire Funds Service should take into account in an Expanded Hours operating environment. The PRC views interbank payment system settlement as both a core responsibility of the Federal Reserve (as the U.S. central bank) and a critical component in maintaining the safety, soundness, and efficiency of payment systems. To accomplish this study, the PRC sponsored the Expanded Hours Working Group composed of subject matter experts from product, operations, risk, and technology areas within our PRC member firms.

Despite the challenges 2020 presented in the midst of a global pandemic and the structural changes in the way we live and work, innovation and the functioning of global payment systems remained resilient and so did the Expanded Hours Working Group. On behalf of the PRC, I am pleased to share with you the results of this study in the form of a white paper drafted by the Expanded Hours Working Group and published by the PRC. I am grateful to the members of the

¹ FedNow and Fedwire are service marks of the Federal Reserve Banks.

PRC Expanded Hours Working Group and the Working Group Lead, Mark Haley, for their work in preparing this white paper.

We continue to recognize that the expansion of Fedwire Funds Service operating hours is an intricate and complex initiative which requires further discussions between the Federal Reserve and market participants and a comprehensive assessment of many considerations, including those discussed in this white paper. However, the broader and far-reaching benefits of Expanded Hours represent critical progress and we would welcome additional opportunities to engage with the Federal Reserve in broader and deeper assessments of the needs and benefits of such a significant and transformative undertaking, including deep-dives on the considerations outlined in the white paper.

Finally, I would like to take the opportunity to urge all stakeholders to accelerate the momentum in exploring the considerations and opportunities of Expanded Hours, so that the Fedwire Funds Service can be the backbone of a globally interconnected and always-on digital economy of the future.

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Preface

The Payments Risk Committee (PRC) is a private-sector organization sponsored by the Federal Reserve Bank of New York (FRBNY). PRC members, drawn from financial firms, meet at regular intervals to identify and analyze risk issues in payment, clearing, and settlement (PCS) activities.² The primary goal of the PRC is to foster enhancements to the safety and efficiency of financial market infrastructure (FMI), which includes identifying opportunities to strengthen the clearing and settlement of financial transactions, and to inform the Federal Reserve about developments, conditions, and practices in PCS activities.

The views expressed in this document are the views of the PRC only and do not necessarily represent the views of the Board of Governors of the Federal Reserve System (Board), FRBNY, or any other entity within the Federal Reserve.

² The current members of the PRC represent Bank of America, BNY Mellon, Citi, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan Chase, Morgan Stanley, MUFG, State Street, UBS, and Wells Fargo.

Executive Summary

The ability to make and settle payments up to 24x7x365 (24x7) is both a significant private-sector objective and an important global public policy goal. Over the last few years, a number of global initiatives have resulted either in the creation of new payment systems or the expansion of operating hours of existing systems.³ In the U.S., the Federal Reserve is currently developing a 24x7 instant payment system called the FedNow Service (FedNow) while also exploring expanded hours for the Fedwire Funds Service (Fedwire).⁴ That said, the PRC appreciates the opportunity to publish this white paper in support of the Federal Reserve as it engages with the industry to “evaluate fully the relevant operational, risk, and policy considerations for both the Reserve Banks and participants” associated with expanding Fedwire operating hours up to 24x7 (Expanded Hours).⁵

As countries around the world augment their payment system operating hours, it is strategically important that the U.S. Dollar (USD) is ‘always on’ to remain the world’s preferred settlement asset. International businesses increasingly operate in a 24x7 environment and require the underlying cross-border payments driven by these businesses to happen 24x7 as well. While options to offer 24x7 cross-border payments for consumers exist, such options are not comprehensive in terms of scale, reach, and nature of flows supported, and deferred settlement makes them sub-optimal from liquidity and credit risk perspectives. Additionally, although consumers can benefit from 24x7 access through instant payment systems such as FedNow, institutional and public sector clients whose activities require processing and immediate finality of large-value payments necessitate Expanded Hours as well.

Given the remit of the PRC and its view that interbank payment system settlement is both a core responsibility of the Federal Reserve, as the U.S. central bank, and a critical component in maintaining the safety, soundness, and efficiency of payment systems, the PRC continues to support the expansion of Fedwire operating hours. In early 2020, the PRC sponsored a working group (Expanded Hours WG) to explore key considerations to be taken into account in an Expanded Hours environment.⁶ This white paper summarizes the work conducted by the Expanded Hours WG and discusses a few key considerations, including Reserve Bank intraday credit provisions, “business day” and “value date” conventions, optional or phased adoption

³ These include the Eurosystem’s TARGET Instant Payment Settlement (TIPS) infrastructure launched in 2018 and the expansion of the Reserve Bank of India’s large-value real time gross settlement (RTGS) system operating hours to 24x7 in 2020. See: <https://www.ecb.europa.eu/paym/target/tips/html/index.en.html> and <https://m.rbi.org.in/Scripts/FAQView.aspx?id=65>.

⁴ See Board of Governors of the Federal Reserve System, Federal Reserve Actions to Support Interbank Settlement of Faster Payments, 84 Fed. Reg. 39297 (Aug. 9, 2019), available at <https://www.govinfo.gov/content/pkg/FR-2019-08-09/pdf/2019-17027.pdf>

⁵ *Id.* at 39316. For purposes of this white paper, “Expanded Hours” is defined as any time period between Fedwire’s current operating hours up to 24x7x365.

⁶ See Appendix I for the list of members of the Expanded Hours WG.

approaches, participant directory information requirements, staffing models, technology support, liquidity risk management, and FMI innovation.

Background: Origin of Fedwire Expanded Hours and the PRC WG

In August 2019, the Board determined that the Reserve Banks should develop a new “interbank 24x7x365 real-time gross settlement service...to support faster payments in the United States.”⁷ The Board also indicated that the Federal Reserve would explore expanded hours for Fedwire “to support a wide range of payment activities, including liquidity management in private-sector real-time gross settlement services for faster payments.”⁸

In November 2019, the PRC published a letter supporting the Board’s proposal to explore Fedwire Expanded Hours. The PRC noted the need to support global clients’ activities in markets operating in different time-zones or geographies, the strategic importance of maintaining the USD as the world’s settlement currency of choice, and the goal of ensuring that Fedwire remains the primary settlement mechanism for USD.⁹

In August 2020, the Board provided additional details on FedNow.¹⁰ The Board also announced a new Liquidity Management Tool (LMT) to “support participants in a private-sector instant payment service backed by a joint account at a Reserve Bank by enabling transfers between the master accounts of participants and a joint account.”¹¹ That said, the Board indicated that “the Federal Reserve continues to explore expanded hours for the Fedwire Funds Service.”¹²

“Because of the systemic importance of the Fedwire Funds Service and the Board’s risk management expectations for the service,” the Board indicated that “additional analysis is needed to evaluate fully the relevant operational, risk, and policy considerations” given Expanded Hours.¹³ To support this analysis, the Board also indicated that the Federal Reserve would “engage with the industry on issues related to expanded Fedwire Funds Service... operating hours, as well as on potential approaches for expanding those hours,” ranging from “limited availability on weekends and holidays to full 24x7x365 availability”.¹⁴ Through this engagement, “the Federal Reserve intends to solicit additional information about the industry’s

⁷ Board of Governors of the Federal Reserve System, Federal Reserve Actions to Support Interbank Settlement of Faster Payments 84 Fed. Reg. 39297(Aug. 9, 2019)., available at <https://www.govinfo.gov/content/pkg/FR-2019-08-09/pdf/2019-17027.pdf>

⁸ *Id.* The 2019 Federal Register Notice mentioned other activities which may benefit from Expanded Hours, including: settlement of net interbank obligations (such as payment card services), additional ACH settlement windows, margin payments related to trading conducted on 24-hour platforms, and payments related to mergers and acquisitions that close on a weekend. *Id.* at 39315-6. available at <https://www.govinfo.gov/content/pkg/FR-2019-08-09/pdf/2019-17027.pdf>

⁹ See Appendix II for more information on the PRC’s comment letter and rationale for Fedwire Expanded Hours.

¹⁰ See Board of Governors of the Federal Reserve System, Service Details on Federal Reserve Actions to Support Interbank Settlement of Instant Payments, 85 Fed. Reg. 48522 (Aug. 11, 2020)., available at <https://www.govinfo.gov/content/pkg/FR-2020-08-11/pdf/2020-17539.pdf>

¹¹ *Id.* at 48524.

¹² *Id.* at 48532 n. 61.

¹³ Board of Governors of the Federal Reserve System, Federal Reserve Actions to Support Interbank Settlement of Faster Payments 84 Fed. Reg. 39297, 39316 (Aug. 9, 2019)., available at <https://www.govinfo.gov/content/pkg/FR-2019-08-09/pdf/2019-17027.pdf>

¹⁴ *Id.*

specific needs and readiness related to these options.”¹⁵ Subject to the outcome of this analysis, the Board indicated it would “seek public comment separately” on plans to expand Fedwire operating hours.¹⁶

Given the diverse set of knowledge and expertise PRC members bring to the industry, the PRC proactively sponsored the Expanded Hours WG in 2020 to support the Federal Reserve in its industry engagement efforts through:

- **Describing potential operational, risk, and policy considerations** for both the Reserve Banks and Fedwire Participants in an Expanded Hours environment and
- **Outlining potential recommended approaches and additional analyses** to address considerations, either at the individual participant, industry, or regulatory level.

¹⁵ *Id.*

¹⁶ *Id.* at 39297.

Key Considerations for Fedwire Expanded Hours

As payment systems evolve both in terms of availability (hours) and reach (cross-border), demand for round-the-clock liquidity, operations, and technology is anticipated to increase and become more complex.¹⁷ The PRC is conscious of the challenges Reserve Banks, Fedwire participants, and other industry participants may face in an Expanded Hours environment, whether it's the need for additional staffing in support of longer operating hours or multiple considerations from the perspective of account balance and liquidity management.

The PRC also acknowledges that the timing of implementing Fedwire Expanded Hours may need to be staggered in such a way that supports other significant initiatives in the payments ecosystem, such as FedNow implementation and the ISO 20022 migration, among others. That said, early engagement and collaboration between the Federal Reserve and industry participants will be key to ensuring a smooth transition to Fedwire Expanded Hours, including addressing common considerations across ongoing initiatives and identifying unique considerations that may require added focus and prioritization.

As the Board has mentioned, there are a number of operational, risk, and policy considerations that have to be analyzed prior to expanding Fedwire operating hours. The Expanded Hours WG has identified the following key initial considerations:

- I. Eligibility for Reserve Bank intraday and overnight credit
- II. Fedwire "business day" definition and "value date" convention
- III. Optional or phased adoption
- IV. Participant directory requirements
- V. Staffing models across payment businesses and related functions
- VI. Technology support for traditional "off hours" transaction processing and systems maintenance
- VII. Liquidity risk management methodologies and management information systems (MIS)
- VIII. Support for private-sector FMI innovation

¹⁷ Fedwire and other large-value payment systems typically handle large-value and high-priority payments while retail payment systems, like FedACH, and instant payment systems, like FedNow, typically handle lower-value payments. While both Fedwire and FedNow share a number of similar characteristics, their similarities and differences inform a number of the considerations discussed in this white paper. Appendix III provides additional background information on Fedwire and FedNow product specifications relevant to understanding these considerations.

Consideration I: Eligibility for Reserve Bank intraday and overnight credit

One of the most important policy considerations in an Expanded Hours environment is the availability, use of, and governance around extensions of intraday credit by the Reserve Banks to Fedwire Participants and how this relates to overnight credit or discount window loans. As mentioned in its Payment System Risk (PSR) Policy, “the Board recognizes that the Federal Reserve has an important role in providing intraday balances and credit to foster the smooth operation of the payment system.”¹⁸

The Reserve Banks provide intraday liquidity by way of supplying temporary, intraday credit to healthy depository institutions.¹⁹ The PSR Policy encourages collateralization of such intraday credit by waiving fees associated with collateralized overdrafts. The Board believes that “such a strategy enhances intraday liquidity while controlling risk to the Reserve Banks by providing incentives to collateralize daylight overdrafts.”²⁰

The August 2020 FedNow announcement indicated that “intraday credit will be provided for participants in the FedNow Service during its business day under the same terms and conditions as are available for other Federal Reserve Services,” but that “discount window will continue to be available until the close of the Fedwire Funds Service, Monday through Friday, under the same terms as today.”²¹ The announcement reiterated that FedNow participants “will be expected to manage their master accounts in compliance with Federal Reserve policies, including avoiding negative balances at the close of the business day, each day of the week, to avoid overnight overdrafts.”²² Therefore, the announcement acknowledged that some FedNow participants “may need to adjust internal account monitoring practices to manage intraday liquidity.”²³ That said, the announcement introduced the LMT that would allow participants in the FedNow Service and private-sector instant payment systems to better manage liquidity.

As Fedwire transaction flows are much larger than the flows expected to be driven by FedNow activities, Reserve Bank intraday credit facilities *may be necessary* to support the large-value nature of Fedwire transactions and potential changes to intraday liquidity profiles driven by around the clock operating hours, client demand, optional/phased adoption, etc. The Board may need to explore updates to Federal Reserve policies (PSR; Discount Window) to continue striking an appropriate balance between safety and efficiency while incentivizing prudent bank behavior. For example, the Board may want to reduce unintended consequences when central bank liquidity may be available 24x7 versus when there is a clear distinction between “intraday”

¹⁸ Board of Governors of the Federal Reserve System, Federal Reserve Policy on Payment System Risk 4 (effective Mar. 19, 2021), available at https://www.federalreserve.gov/paymentsystems/files/psr_policy.pdf

¹⁹ The Federal Reserve publishes historical statistics on aggregate intraday credit usage in the Board’s public website available at https://www.federalreserve.gov/paymentsystems/psr_dlod.htm.

²⁰ PSR Policy, *supra* note 18, at 4.

²¹ Board of Governors of the Federal Reserve System, Service Details on Federal Reserve Actions to Support Interbank Settlement of Instant Payments, 85 Fed. Reg. 48522, 48531-32, 48532 (Aug. 11, 2020).

²² *Id.* at 48532.

²³ *Id.*

and “overnight” credit by using current tools such as penalty rates and public disclosure of certain credit usage (e.g., discount window usage). Expansion of daylight overdraft eligibility and access may also potentially include certain restrictions on size, transaction type, posting time, eligibility (including phased implementation), etc. and may be supported by ISO 20022 message enhancements.

At this time, the Expanded Hours WG does not have a specific view on the nature and amount of intraday credit necessary to support Fedwire Expanded Hours, which ultimately will be informed by each Fedwire participant’s current/projected transaction activity and related intraday credit needs. That said, the WG recommends exploring the following questions:

*Policy questions to consider surrounding the provision of and governance around intraday credit:*²⁴

1. Should the Federal Reserve consider making available intraday credit to creditworthy Fedwire participants during Expanded Hours? Should the Federal Reserve restrict availability of intraday credit provisions only to certain Fedwire operating hours (e.g., 24x5, 22x5, 22x7) to meet time of day needs of Fedwire participants?
2. What should the Federal Reserve’s posting rules be for each credit and debit to a Fedwire participant’s Reserve Bank account? Should the Federal Reserve evaluate intraday credit eligibility based on participation (full, partial/weekday only)?
3. How should the Federal Reserve price intraday credit provisions with and without collateralization? Should the Federal Reserve price intraday credit provisions on the basis of 24 hours? Should the Federal Reserve require all intraday credit usage to be collateralized during certain operating hours (weekends, “just before” end-of-day)?
4. Should the Federal Reserve’s intraday credit policy be amended to reflect time of day usage to ensure safety and soundness while taking into consideration efficiency of intraday payment flows (e.g., higher charges for “late in the day” usage to minimize concentrations of payments)?
5. Should the Federal Reserve ensure consistency in the timeframes during which Fedwire and FedNow related intraday credit will be available?

Policy questions to consider regarding the provision of and governance around overnight credit:

1. Should the Federal Reserve provide overnight funding by way of discount window lending or overnight overdrafts during Expanded Hours? If so, how should the Federal Reserve define overnight versus intraday (e.g., intraday overdrafts that have not been extinguished by the end of the business day, duration of overdrafts)?
2. How should the Federal Reserve price overnight funding? Would this become the industry benchmark to create and price new funding products for intraday 24x7

²⁴ Proposed discussion questions in this and later sections provide suggestions as to the types of questions the Federal Reserve may consider asking industry participants, including Fedwire Participants, or developing initial positions on as part of the Fedwire Expanded Hours rulemaking process. The PRC and Expanded Hours WG would welcome further engagement on these topics with the goal of providing specific recommendations on approaches.

interbank funding markets (e.g., Fed Funds, international money market placements, intraday cross-currency swaps, and intraday repo) based on time of day commitment to fund and repay and cost of funds to be calculated in minutes and seconds?

Consideration II: Fedwire “business day” definition and “value date” convention

Another key consideration in an Expanded Hours environment is how the Federal Reserve defines its “business day.” This policy decision may inform business day definitions of other payment systems which currently operate or will operate 24x7 and may have implications on other considerations (e.g., liquidity management, staffing, technology). When FedNow goes live in 2023, its business day will align with the Fedwire business day, but it will also be important to ensure consistency in business day definitions and value date conventions across payment systems that offer the similar services or act as alternatives to one another (FedNow/RTP, Fedwire/CHIPS).²⁵

Expansion of Fedwire up to 24x7 presents several considerations regarding how to define Fedwire’s business day, including End-of Day (EoD) and Start-of-Day (SoD), and how to treat the value date of transactions processed. Since a 24x7 operating model implies that there is no down time, the Federal Reserve will have to make a policy decision to establish when the value date for Fedwire participant balances at the Federal Reserve change. The policy position may also implicitly define the Fedwire business day. These considerations include:

- **Allowing the Expanded Hours value date change to occur at currently established Fedwire closing and opening times to reduce impact to Business As Usual (BAU) processes.**
 - **Using the current 7:00 p.m. ET closing time** will align with current cut-off times for Fedwire and planned cut-off times for FedNow and may reduce disruptions to current EoD processes. From a client geography perspective, this would benefit Asia-Pacific markets by allowing even earlier overlapping time with the U.S. However, the benefit to these markets may not be uniformly realized and may depend on their individual time zone differences and market infrastructure. For example, a market like India may benefit from a 7:00 p.m. ET market open not because of the time difference (it is 5:30 a.m. in India) but from the fact that it has a 24x7 large-value RTGS.
 - **Alternatively, using the current 9:00 p.m. ET opening time** will effectively extend the Fedwire and FedNow operating day by 2 hours and may reduce disruptions to current SoD processes. From a client geography perspective, this would benefit U.S. west coast banks by allowing a later business day close at 6:00 p.m. Pacific Time (PT). In addition, a later EoD/SoD may also address

²⁵ See *Id.* at 48530. As described in the August 2020 FedNow announcement, “for the purpose of the Reserve Banks’ accounting processes, transactions processed after the FedNow Service’s close but before midnight eastern time each calendar day would be recorded on Federal Reserve accounting records as transactions occurring on the next calendar day.” *Id.* The Federal Reserve indicated that “[t]his approach mirrors the approach used by the Reserve Banks for recording Fedwire Funds Service transactions that occur after the service’s opening at 9 p.m. eastern time (ET) and before midnight ET, where these transactions are recorded as occurring on the next business day.” *Id.* at 48530, n. 48.

occasional bottlenecks associated with “late in the day” payments which may lead to Fedwire extensions by providing a longer time period until EoD during which time these payments can be redistributed and continue to be processed. However, potential changes in operating hours of other market infrastructures (e.g., those supporting securities settlement) as a result of a later Fedwire EoD may simply shift “late in the day” payments to “later” in the day.

- **Allowing the value date change to calendar roll over (i.e. midnight ET).** This option simply aligns the value date to the change in calendar date (ET). This option would have negative impacts to business day alignment with Asia-Pacific markets and have limited incremental benefit from earlier considerations.

The Fedwire “business day” policy consideration may also dictate how Fedwire participants (who themselves may also be participants of other payment systems) correspondingly define “value date” for their clients’ transactions and related account balances (intraday vs. overnight). Similar considerations were analyzed by industry participants in Europe regarding SEPA Instant Credit Transfers (SCT Inst).

In August 2018, the European Advisory Group on Market Infrastructures for Payments (AMI-Pay) issued a non-binding markets best practice for value-dating SCT Inst after considering three potential scenarios:²⁶

- **Scenario 1:** Payment Service Providers (PSPs) could value-date transactions on the calendar date on which they are executed, i.e. a transaction that is executed on a Saturday would be value dated on that Saturday.
- **Scenario 2:** The central bank money value date could be used as a basis for value dating. In this case, transactions could be value-dated on the first possible TARGET2 business day on which the payee’s PSP is able to transfer the received funds to its RTGS account, regardless of whether it actually chooses to do so, i.e. a transaction that is executed on a Saturday would be value dated the following Monday.
- **Scenario 3:** Individual PSPs decide on their approach towards value-dating, i.e. transactions executed on a Saturday may be value-dated by some PSPs on the Saturday and by others on the following Monday.

After analyzing the different scenarios above, a majority of European market participants expressed a preference for scenario 1, since in their view this is the approach that is in line with their clients’ expectations. AMI-Pay therefore supported a common approach among PSPs whereby transactions are value-dated on the calendar date on which they are executed.

²⁶ See European Central Bank Advisory Group on Market Infrastructures for Payments, Value dating SEPA Instant Credit Transfers – non-binding AMI-Pay market best practice (Aug. 2018), available at https://www.ecb.europa.eu/paym/groups/ami/shared/pdf/Value_dating_SEPA_Instant_Credit_Transfers_-_non-binding_AMI_-_Pay_market_best_practice.pdf.

While similar considerations have been analyzed in the context of FedNow, the Expanded Hours WG acknowledges that the Board “expects that participating banks will record FedNow Service transactions in their customer accounts according to their own business day and accounting conventions (while still providing immediate access to funds received through the FedNow Service)” and “recognizes that a bank’s definition of a business day may also affect its conventions for reporting and recording transactions that occur on weekends and holidays.”²⁷ Furthermore, the Board indicated that “a seven-day accounting regime adopted by the Federal Reserve, however, does not dictate or preclude use of specific other accounting regimes by participating banks.”²⁸

While the Expanded Hours WG does not have a specific view on the appropriate Fedwire “business day” definition or “value date” market convention at this time, the WG wants to highlight these perspectives as industry participants may potentially need to agree on certain industry conventions or best-practices to avoid confusion and potential arbitrage.

Policy questions to consider regarding the provision of and governance around closing/opening times and value dates:

1. Should the Federal Reserve set Fedwire EoD/SoD at 7:00pm ET (current EoD)?
2. Should the Federal Reserve set Fedwire EoD/SoD at 9:00pm ET (current SoD)?
3. Should the Federal Reserve mandate Fedwire participants to align their business days/value dating regimes to the Fedwire business day to avoid intraday/overnight credit arbitrage among Fedwire participants as well as their customers?
4. Other than reducing impact to current EoD and SoD processes, as well as client geographical considerations, what other obstacles should the Federal Reserve consider in determining the optimal EoD/SoD for Expanded Hours?
5. Should there be alignment in “business day” definitions between operators of similar payment systems that either currently or in the future may operate 24x7 (RTP and FedNow, Fedwire and CHIPS)?

²⁷ Service Details on Federal Reserve Actions to Support Interbank Settlement of Instant Payments, 85 Fed. Reg. 48522, 48531 (Aug. 11, 2020).

²⁸ *Id.*

Consideration III: Optional or phased adoption

Given the diversity and large number of Fedwire participants, a balanced approach will be essential to minimize the potential burden on and associated operating costs for participants who may not leverage Expanded Hours, while still providing the flexibility for other participants who may choose to utilize Expanded Hours given their business models.²⁹ Despite a long-term goal of full reachability and payment ubiquity, an optional or phased adoption within controlled parameters could help address the needs of Fedwire participants and their underlying customers, while also mitigating unintended consequences of such large-scale projects, especially in an environment where consistent Fedwire participant operating hours are not mandated.

Full participation in the entire Fedwire operating day is not required today and may not be required in a 24x7 USD banking system (i.e., it is optional for a bank to open at 9:00 p.m. ET and may choose to do so the morning of the following calendar day).³⁰ That said, the Federal Reserve may consider optional or phased adoption arrangements similar to those currently being explored for FedNow. Fedwire participation options may range from “Status Quo” participation to “Full” participation, including an arrangement to be a “receive only” participant during certain operating hours (similar to FedNow’s phased approach allowing “receive-only” participation).³¹ This approach would accommodate the large number of existing Fedwire participants that do not currently leverage the full existing hours (choosing to only clear payments during the U.S. daytime) but would also accommodate Fedwire participants who, by nature of their cross-border or international client footprint, may wish to send payments to similarly situated Fedwire participants throughout the full Fedwire operating day.³²

Optional or phased adoption approaches may also include transaction level limitations based on message type codes (e.g., type code 10: customer vs type code 16: bank) and amount

²⁹ Expanded Hours may potentially be more burdensome to smaller participants who currently do not operate with a 24x7 staffing, technology, and risk management capabilities.

³⁰ Certain central banks may approach optional or phased adoption differently. In expanding its large-value RTGS to 24x7, the Reserve Bank of India advised its RTGS participants to put in place infrastructure to provide RTGS round the clock to their customers. See Reserve Bank of India, 24x7 Availability of Real Time Gross Settlement (RTGS) System (Dec. 4, 2020), available at <https://rbidocs.rbi.org.in/rdocs/notification/PDFs/RTGS24X71798171F014C4AF18C755BAA2AECE838.PDF>.

³¹ FedNow participants will have the option of enrolling in the FedNow Service as a “receive-only” participant. These participants will not be required to have the ability to originate payments through the FedNow Service but can still receive instant payments. This feature is anticipated to increase the accessibility of FedNow and support nationwide adoption of instant payments. See The Federal Reserve Financial Services, FedNow Service, available at <https://www.frbservices.org/assets/financial-services/fednow/fednow-product-sheet.pdf>.

³² Currently, regardless of whether a Fedwire participant is operational or not during the 9:00 p.m. ET Fedwire SoD, that participant’s master account at a Reserve Bank is able to receive incoming credits as soon as Fedwire opens. A “receive-only” option for Fedwire going forward could either by default (i.e., a participant that is not operational would continue to receive incoming credits into their Reserve Bank master account as in BAU) or through a new explicit opt-in/opt-out feature (i.e., a participant that is not operational during certain operating hours would not be able to send nor receive transactions as opposed to being able to receive by default).

thresholds during certain time periods (e.g., lower limits for “late in the day” transactions).³³ Similar operating procedures exist today, such as earlier cut-offs for customer transactions prior to Fedwire close, which may allow Fedwire participants to better manage liquidity positions and account processes prior to EoD/SoD.³⁴

To enable Fedwire participants to better navigate the diverse set of participant operating hours under an optional or phased adoption regime, a comprehensive industry-wide participant directory should be developed to allow Fedwire participants to make informed decisions in their payment processing. Directory considerations, described further below, should allow Fedwire participants to make decisions (e.g., queue payments) based on the anticipated impact to operations and liquidity based on counterparty availability.³⁵

The Federal Reserve and the broader Fedwire participant community need to engage on the viability of the various options or limitations on transactions, considering that more flexibility creates additional complexities and increases costs, both of which need to be minimized to encourage participation and ensure payment system efficiency.³⁶ Operationalization of such criteria-based approaches to optional or phased adoption would also depend on existing capabilities at the time operating hours are expanded, such as the ability of message formats to capture information that would allow for more targeted management, monitoring, and control of payment flows (from both the Reserve Banks and Fedwire Participants’ perspective).

While the Expanded Hours WG does not have a specific view on the appropriate phases in which Fedwire operating hours may be expanded (e.g., 22x5, 22x7, 24x5), the WG recommends that the Federal Reserve survey Fedwire participants and broader market participants (including FMIs) on specific phase options. This survey may include requesting supplemental information that informs various preferences and alternatives (e.g., use cases, projected activity where available, operational readiness, liquidity implications, client segments impacted, etc.).³⁷

³³ Reserve Bank Operating Circular 6 describes various message type codes. A message with type code 10 refers to a message in which the originator and/or beneficiary fields identify parties other than depository institutions. A message with type code 16 refers to a message in which the only parties to the funds transfer identified in the message are depository institutions. See Federal Reserve Banks, Operating Circular 6, *Funds Transfers Through the Fedwire Funds Service*, § 11.0, available at <https://www.frbservices.org/assets/resources/rules-regulations/030821-operating-circular-6.pdf>.

³⁴ Fedwire Funds Service operating hours are listed on the Reserve Banks’ publicly accessible financial services website, available at: <https://www.frbservices.org/resources/financial-services/wires/operating-hours.html>.

³⁵ In the absence of such transparency, liquidity may be locked up in accounts of Fedwire Participants who are in “receive only” mode and who may not be able to immediately initiate counterbalancing transactions (e.g., reversals through initiation of a new wire transfer). Especially in cases of larger transaction values or on weekends, or as a result of processing errors, non-standardized operating hours could result in potential gridlock scenarios where liquidity will not be readily available in the system until the receiver has started its active business day.

³⁶ Complexities may also include how delays and related compensation arrangements are to be executed.

³⁷ Certain considerations such as BAU and projected usage of Reserve Bank intraday credit are confidential in nature and are best analyzed through Federal Reserve-led surveys or rulemaking request for comment.

Policy questions to consider regarding the implementation of optional or phased adoption:

1. Should the Federal Reserve consider allowing Fedwire participants to determine when and how to participate in Fedwire (e.g., 22x5, 22x7, 24x5, 24x7)? How much flexibility should the Federal Reserve provide Fedwire participants in choosing how to participate in Fedwire (e.g., send and receive, receive only, settlement payment only)?
2. Should the Federal Reserve consider testing operational readiness and technical capabilities for Expanded Hours through a pilot program? What would the pros and cons be of such a program (e.g., participation levels, ability to test more complex considerations such as liquidity management)? Should certain parameters (e.g., intraday credit availability, transaction limits, etc.) be considered if such a pilot program were established?³⁸

In order to better identify the appropriate optional or phased adoption, the Federal Reserve may also want to consider a data collection survey to ask:

1. Who among current Fedwire participants would take advantage of Expanded Hours (i.e., between 7:00 p.m. and 9:00 p.m. ET on weekdays or during weekends)?
2. What types of transactions, including value/volume, do Fedwire participants expect to process during Expanded Hours?
3. What options should the Federal Reserve consider in terms of phased implementation of Expanded Hours (e.g., 22x5, 22x7, 24x5)? What considerations should the Federal Reserve take into account when determining appropriate implementation phases?

³⁸ The PRC notes that a number of organizations from the FedNow Community will participate in a FedNow pilot program to support development, testing, and adoption of the FedNow Service, as well as encourage development of services and use cases that leverage FedNow functionality. See The Federal Reserve, *Announcing the FedNow Pilot Program participants*, available at <https://www.frbservices.org/financial-services/fednow/community/news/012521-announcing-pilot-program-participants.html>.

Consideration IV: Participant directory requirements

As discussed above, to support optional or phased adoption and provide Fedwire participants with transparency on wire routing and timeliness, expanded and aggregated information on Fedwire participants and type of participation (e.g., 22x5, 22x7, 24x5, 24x7, send/receive, receive only, FedNow/Fedwire, FedNow only) is needed. For example, enhancing the Federal Reserve's current E-Payments Routing Directory may be required to promote this needed transparency.³⁹ Alternatively, the industry may explore developing its own directory and include information on participation in market infrastructures beyond those operated by the Federal Reserve.

Below are a few examples of U.S. domestic and global participant directories:

- **The Fed**
 - Fedwire Participant Details: Bank Name, Location, Routing #, Book Entry Securities (eligible/ineligible), Funds (eligible/ineligible)
 - FedACH Participant Details: Bank Name, Location, Routing #, Institution Status, Servicing FRB #
- **The Clearing House (TCH)**
 - List of CHIPS Members: CHIPS routing Number, Name, Home Office
 - Universal Identifier # (UID) lookup: UID, BIC/SWIFT, Name and Address
 - Real Time Payments (RTP): ABA
- **Target 2**
 - Real Time Gross Settlements (RTGS) BIC Directory: BIC, Adresse BIC, Account Holder BIC, Participation Type, Institution Name, City Heading, National Sorting Code, ...
 - Target Instant Payments (TIPS) Directory: User BIC, Institution Name, Party BIC, Account Owner BIC, Participation Type, Maximum IP Amount, ...
- **Vendor Products**
 - Vendors like SWIFT or Accuity (responsible for FED ABA creation) summarize directory information across SWIFT and various payment rails

There are a few considerations the Federal Reserve, Fedwire participants, and broader industry participants may take into account in enhancing existing or developing new participant directories:

- **Low impact recommendation –**
 - Create a new Fedwire Expanded Hours participation “category,” for download on the existing E-Payments Routing Directory as a new service (e.g. Fedwire “Regular” Hours, Fedwire “Expanded” Hours, ACH).
- **Medium impact recommendation –**
 - Consolidate information on participation in Federal Reserve services (Fedwire Funds, FedACH, FedNow, Fedwire Securities) and in similar U.S. domestic private

³⁹ The Federal Reserve's E-Payments Routing Directory is available at <https://www.frbervices.org/resources/routing-number-directory/index.html>.

sector alternatives (CHIPS, EPN, RTP), including information on participant availability (e.g., 22x5, 22x7, 24x5, 24x7).

- **High impact recommendation, but more strategic –**
 - Develop a global directory which would include information on participant availability (across U.S. domestic and global payment systems), globally recognized identifiers such as SWIFT BIC or LEI, mapping of globally recognized identifiers to market infrastructure-specific identifiers, types of transactions processed, and transaction timelines.

As global market infrastructures move to a 24x7 operating model and as payment platforms rely on an interconnected network of payment systems and intermediaries, having interoperability will be important. At the very least, transparency on availability and participation modes will be essential. The approach taken by the Federal Reserve and/or the industry will depend on how well existing directories meet current needs and the cost to investing in enhanced directories (relative to estimated return on investment).⁴⁰

Policy questions to consider regarding the creation of an enhanced participant directory:

1. Should the Federal Reserve consider developing or mandating the development of a participant directory to support the transition to 24x7?
2. What information will be key to include in the participant directory in order for Fedwire participants to better manage and control payment activity and related liquidity?
3. Should the participant directory be maintained by the Federal Reserve or the industry?

⁴⁰ Return on investment may simply come in the form of increased participation in Expanded Hours driven by increased client demand. Benefits may also include better control over payment routing/queueing to better manage liquidity, especially in an environment where Fedwire Participants continue to operate under different business hours.

Consideration V: Staffing models across payment businesses and related functions

Staffing models at Fedwire participants vary based on products offered, client base, and geographic footprint. Skills and expertise needed to support the payments businesses of Fedwire participants are diverse and span operations, technology, client service, treasury, relationship management, risk management (including cyber resilience), product management, network management, and compliance (among others). Expanded Hours may impact staffing requirements due to expanded product offerings, client base, or geographic footprint. Expanded Hours may also impact staffing by necessity (e.g., to monitor incoming payments and impact on balance sheet despite being a “receive only” participant).

Fedwire participants need to take inventory of current and projected staffing footprints in order to determine which potential staffing model changes are necessary based on expanded product offerings and the needs of existing or potential client base. Staffing inventory may include different dimensions such as geographic location/time zone (including follow-the-sun models), function, skillsets, roles/responsibilities, availability, product alignment (e.g., all 24x7 services, by currency, by client base), among others.

As full participation in the entire Fedwire operating day by all Fedwire participants may not be required, banks will need to consider the benefits of supporting Expanded Hours versus the additional operational costs.⁴¹ Additionally, not all resource requirements are uniform across the entire Fedwire operating day for all participating banks. For example, it is possible that lower cost operational resources are required towards the beginning of the operating day but higher cost treasury management professionals are required towards the end of the operating day to manage their firm’s balance sheet and cash position. Even in the absence of full support, additional resources should be considered in order to monitor Expanded Hours considerations noted elsewhere in this paper. For example, resolution of policy considerations regarding when the value date may change could impact how late Fedwire “closes.” This may have a disproportionate impact to costs as late day resources may be higher cost.

Core Operations

Larger Fedwire participants typically have more extensive operating hours that allow them to actively cover today’s 22x5 model, whether operations are covered in one location or with a follow-the-sun model, so the change to Expanded Hours (up to 24x7) may not be significant. Expanded Hours will require additional considerations to determine requirements based on potential changes to volumes. Volumes may either increase due to higher demand (including new use cases) or be redistributed to different hours/days of the week given expanded operating hours. Volume will also drive cost/benefit considerations as Fedwire participants look

⁴¹ Subject to adoption and each bank’s operating model, staffing needs may be managed depending on transactions supported (e.g., incoming only, incoming and outgoing, liquidity transfers only, select client segments only).

at incremental operating costs against incremental volumes and revenues from Expanded Hours and days of service.

While technology considerations are addressed later in this paper, the current 22-hour day provides the possibility of an extension in the event of significant volume delays from issues such as technology outages. In a full 24-hour day, this option will be obsolete and delayed payments may be processed with a new value date.

Non-Core Operations

Non-core operation functions such as treasury, credit risk, sanction screening, and fraud will also be impacted by Expanded Hours. For Fedwire participants working a follow-the-sun model, where services overlap across multiple time zones, the 24-hour day will have less of an impact. For other participants' operating in reduced or single time zone models, the change could be significant. Participants will have to weigh the benefits of additional operating hours for support functions or accept delays in payments processing for sanction hits or potential fraud pending escalation reviews.

Liquidity monitoring will be impacted based on when EoD is pegged as Fedwire participants monitor their positions approaching EoD. The degree of impact will also be determined by the change from current operating hours per day for a given participant. Volumes will again be a key consideration in how each participant looks to adapt to 24-hour days and weekend operations.

The implementation of Expanded Hours will likely serve as a catalyst for change in other aspects of staffing models in operations. As the market looks to move towards 24x5 or 24x7, automation will take on a greater role to complete processes such as EoD and SoD. In addition, offshoring (i.e., to lower cost locations) and/or outsourcing (i.e., to third-parties) will offer opportunities to provide extended coverage. For high value payments, however, risk appetites will temper the impact of this option on staffing models.

The move to Expanded Hours operation also means that current EoD processing must be redesigned. Also, important would be considerations around maintaining a technology staffing support model to address any cyber or production issues, including system outages. Such outage staffing considerations apply not only to Fedwire participants, but also to the Reserve Banks operating Fedwire as well.

Consideration VI: Technology support for traditional “off hours” transaction processing and systems maintenance

Management of critical technological processes and functions such as “off hours” systems maintenance, upgrades, and payments processing may need to be enhanced or reengineered. Fedwire participants with global footprints or 24x7 services (e.g., cards, ATMs, RTP) may already perform critical functions round-the-clock while those with smaller footprints may need to continue relying on “shutting down” systems to perform such functions. In addition, certain Fedwire participants may still operate using outdated, fragmented, and expensive legacy systems which may present additional obstacles to migrating to an Expanded Hours environment.

The various considerations required for technology to support 24x7 payments are wide-ranging. With systems having to operate in real time and be continuously available 24x7, any level of unavailability needs to be minimized. 24x7 payments also impact various key components of the wider payments system architecture including payment initiation channels, payment processing engines, core banking platforms, credit risk management, compliance, fraud monitoring systems, and client service platforms.

Critical processes should be available on a 24x7 basis and deliver a minimum of 99.99% availability.⁴² A 24x7 guaranteed availability requirement versus a 24x7 model with a 99.99% availability can make a significant difference to the complexity and costs of managing and upgrading various system components critical to round the clock operations. For example, a guaranteed availability of system resources may require investment in a micro-service based system architecture that allows for online upgrade or maintenance of specific and targeted system components. This provides necessary flexibility to switch specific components online upon completion of the desired upgrade or maintenance.

From a contingency standpoint, under a 24x7 guaranteed availability arrangement, there can be no single point of failure and Fedwire participants may have to invest in a *dual* or *tertiary* site processing capability. Compared to this, a 24x7 model with a 99.99% availability could provide banks with 4-hours per week of system downtime that could help facilitate smoother upgrades and maintenance activities. Similar to technology staffing considerations to address outages, technology contingency planning considerations apply not only to Fedwire participants but also to the Reserve Banks operating Fedwire.⁴³

⁴² A Fedwire Participant’s SLA availability with its clients in a 24x7 operating hour environment will be informed by the Federal Reserve’s own SLA availability with its Fedwire Participants.

⁴³ See the Interagency Paper on Sound Practices To Strengthen the Resilience of the U.S. Financial System available at <https://www.occ.treas.gov/news-issuances/bulletins/2003/OCC2003-14a.pdf>. *Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System*, 68 Fed. Reg. 17809 (Apr. 11, 2003).

Consideration VII: Liquidity risk management methodologies and management information systems (MIS)

Reserve Banks and Fedwire participants may experience changes in intraday liquidity profiles based on product offering (domestic, cross-border, capital markets), client segment (corporate, financial institution), client business (e-commerce, capital markets), and client location (East Coast, West Coast, EMEA, Asia-Pacific). Such changes may impact the ability to efficiently manage liquidity (e.g., ensure that applicable intraday overdrafts are extinguished and account balance/reserve requirements with the Federal Reserve Banks are met timely).

Fedwire participants may need to enhance technology, procedures/controls, and MIS to:

- 1. Monitor transactions, account balances, and liquidity usage in real-time or near real-time** (subject to “business day” and “value date” conventions as previously discussed);
- 2. Ensure that sufficient funding is available** in Fedwire participants’ Reserve Bank accounts to cover payments throughout the day while the participant is active in Fedwire;
- 3. Actively manage payment flows** to minimize concentration of payments at certain times of day or “late in the day,” as well as unintended consequences for conversion of intraday overdrafts to overnight loans due to payments that may arise shortly before the end of the “business day.” Additionally, Fedwire participants may need to make use of tools such as participant directory by sending payments to participants that are operational in Fedwire in order to not lock up liquidity;
- 4. Address emerging market practices** such as payment obligation with time of day deadline, use of funds to be defined by actual time sent/received instead of the value date, as well as concept of intraday versus overnight overdrafts for customers and corresponding calculations/charges (for example, the number of hours or minutes overdrawn intraday);
- 5. Have controls and procedures in place** to be in compliance with “revised” PSR Policy;⁴⁴
- 6. Meet real time settlement requirements** on net or gross basis of Financial Market Infrastructures to reduce deferred settlement;
- 7. Address regulatory requirements** such as transaction reporting and liquidity stress testing, which have methodologies that may need to be updated for an Expanded Hours regime (where intraday and overnight liquidity need to be clearly defined).

These considerations are similar to those that FedNow participants may already need to address upon the service’s launch in 2023. As mentioned in the August 2020 FedNow announcement, FedNow participants will be able “to request intraday account balances, which

⁴⁴ The Board’s PSR Policy is expected to be updated to reflect FedNow 24x7 availability of intraday credit as well as potential intraday credit to support the FedNow LMT.

would reflect a master account balance inclusive of FedNow Service payment activity.”⁴⁵ The Expanded Hours WG anticipates that the Federal Reserve will also enhance its reporting capabilities during Fedwire Expanded Hours so that Fedwire participants will be able to enhance their liquidity MIS accordingly.

⁴⁵ Service Details on Federal Reserve Actions to Support Interbank Settlement of Instant Payments, 85 Fed. Reg. 48522, 48531 (Aug. 11, 2020) *available at*: <https://www.govinfo.gov/content/pkg/FR-2020-08-11/pdf/FR-2020-08-11.pdf>.

Consideration VIII: Support for private-sector/ancillary FMI innovation

In addition to RTP and CHIPS, other private-sector FMIs such as ACH payments (EPN), securities settlement (DTC), FX settlement (CLS), card network (Visa, Mastercard), and central counterparty (for securities and derivatives) systems have members that may rely on Fedwire (either directly or via settlement banks) to settle activity in central bank money.⁴⁶

While ancillary FMI operating hours are primarily driven by business needs (e.g., settle capital markets transactions), they may also be constrained or informed by central bank system specifications (e.g., operating hours) and market/trading hours. Expanded Hours may encourage development of enhanced product offerings that benefit broader market infrastructure (e.g., same-day ACH, additional settlement cycles for securities/derivatives/FX) possibly to reduce liquidity and settlement risks, for example. Finally, Expanded Hours may promote operational resilience by supporting alternative arrangements for USD (including FX) clearing and settlement 24x7 from both an infrastructure and Fedwire participant perspective. As both CHIPS and Fedwire move toward 24x7, it will be important for operators of both payment systems to continue building a strong foundation for the operational resilience of USD large-value payments, especially if other payments systems (e.g., NSS) do not move to 24x7.

The Federal Reserve should consider conducting surveys of FMIs (e.g., Payment Systems, CCPs, CSDs, SSSs, and Payment Card Networks) and broader industry participants (broker-dealers, trading venues) on expanded product offerings that may be enabled given Expanded Hours settlement in central bank money. Expanded Hours could act as a catalyst for FMI innovation, acknowledging long lead times associated with broader market structure changes but also ongoing initiatives related to digitization. Discussions around expansion of CHIPS and/or Fedwire operating hours should be analyzed jointly from the perspective of USD clearing operational resilience which benefits the industry as a whole.

⁴⁶ The list of Financial Market Utilities (FMUs) designated as “systemically important” by the Financial Stability Oversight Council (FSOC) can be found at https://www.federalreserve.gov/paymentsystems/designated_fm_u_about.htm.

Conclusions and Next Steps

The PRC remains fully supportive of Fedwire Expanded Hours, continues to see both the private-sector and public policy objectives Expanded Hours addresses, and will continue to provide support to the Federal Reserve as it engages with PRC member banks and other industry participants in analyzing the operational, risk, and policy considerations associated with such expansion. The PRC believes that the operational, risk, and policy considerations explored in this white paper may be effectively addressed through appropriate due diligence and planning by the Federal Reserve, Fedwire participants, and broader industry participants, supported by continuous engagement and leveraging of lessons learned from and capabilities developed through parallel related transformational initiatives (e.g., FedNow, ISO 20022, international 24x7 developments).

To that end, the PRC and the Expanded Hours WG would welcome further engagement on the topic of Expanded Hours and deeper dives into the various considerations described in this white paper. For example, the PRC could explore further certain considerations (e.g., intraday liquidity, participant directory, optional or phased adoption) with the goal of providing specific recommendations to potential policy approaches (either prior to or as part of the Federal Reserve's formal rulemaking process). These deep dive analyses may be conducted by members of the Expanded Hours WG and also involve subject matter experts who can provide more technical analyses and support of relevant considerations (e.g., technology, liquidity monitoring capabilities). Finally, the PRC would also work with the Federal Reserve in outreach to FMIs whose services may be impacted (including product innovation that may be enabled) given Expanded Hours settlement in central bank money.

Appendix I: Members of the Expanded Hours Working Group

Working Group Lead	Mark Haley
Bank of America	Philip Calland
Citi	Mark Haley
Deutsche Bank	Paula Roels Bernd Waizenhoefer
Goldman Sachs	Jeffrey Hannan
HSBC	Mayank Agrawal George Rajah
JPMorgan Chase	Beth Geller Ronald McClain
MUFG	Brian Casey
Wells Fargo	Yoko Horio

Appendix II: Rationale for Fedwire Expanded Hours

The PRC reiterates its continued support and rationale for Expanded Hours as previously discussed in the PRC's November 2019 Comment Letter.⁴⁷ While the upcoming FedNow LMT will address the need to support liquidity management for participants in private-sector instant payment systems, there still exist a number of use cases for Fedwire Expanded Hours.

Given the remit of the PRC and its view that interbank payment system settlement is both a core responsibility of the Federal Reserve (as the U.S. central bank) and a critical component in maintaining the safety, soundness, and efficiency of payment systems, the PRC continues to support the expansion of Fedwire operating hours given a number of anticipated advantages, including:

- Offering “just-in-time” 24x7 liquidity management in central bank money via the Federal Reserve’s large-value real time gross settlement (RTGS) system
- Presenting an effective way to provide liquidity management in real-time while decreasing deferral of settlement (to optimize liquidity and risk management) in other market infrastructures and payment services (e.g., credit cards)⁴⁸
- Supporting global clients’ needs in markets operating at different time-zones or geographies where normal activity takes place during Fedwire’s traditional “off” hours (e.g. Asia) or “off” days (e.g. Middle East), including an acceptance of other non-U.S. holiday schedules
- Facilitating cross-currency intraday liquidity management among market participants to optimize available global liquidity while reducing FX settlement risk for USD
- Protecting the USD’s leading position as the currency of choice for international trade settlement and for funding cross-border payments delivered in local currencies
- Ensuring that Fedwire remains the primary settlement mechanism for USD regardless of transaction size or timing.

As international businesses increasingly operate in a 24x7 environment (e.g., e-commerce, globally integrated economies, cross-border supply chains), the underlying cross-border payments driven by these businesses need to happen 24x7 as well. While options to offer 24x7 cross-border payments for consumers exist (e.g. credit cards), deferred settlement makes them

⁴⁷ See Letter from Payments Risk Committee, to Ann E. Misback, Secretary, Board of Governors of the Federal Reserve System (Nov. 7, 2019), *available at*

https://www.newyorkfed.org/medialibrary/microsites/prc/files/PRC_comment_letter_docket_No_1670.pdf.

⁴⁸ In December 2019, the Board already approved modifications to Fedwire Funds Service operating hours to support enhancements to the same-day ACH service, changes to reduce risk that modified service may have on delays to the reopening of the Fedwire Funds Service, and changes to the PSR Policy related to transaction posting times and overdraft fees. See Press Release, Board of Governors of the Federal Reserve System, Federal Reserve approves modifications to National Settlement Service and Fedwire Funds Service to support enhancements to the same-day automated clearinghouse service (Dec. 23, 2019), *available at*

<https://www.federalreserve.gov/newsevents/pressreleases/other20191223a.htm>

sub-optimal from liquidity and credit risk perspectives.⁴⁹ Additionally, such existing options are not comprehensive in terms of their scale, reach, and nature of flows supported (e.g., not suitable for large-value transactions nor settlement of USD legs of FX transactions). The expansion of Fedwire operating hours would significantly extend the ability of international commerce to be conducted and settled 24x7 in USD.

International and Industry Developments

The PRC also notes a few key markets have already started focusing on enhancing their large-value payment systems. This focus is aimed at supporting various current and future 24x7 operating models to facilitate swift and seamless payments in real-time for various businesses and financial institutions:

- The Bank of England (BoE) established an RTGS Renewal Programme to launch a next generation RTGS system in a phased manner through 2025.⁵⁰ The plan includes developing technological capability which will have the flexibility to be upgraded to potentially support full 24x7 operating hours in line with industry demand. Initially, technology is being developed to have the capability to support 22x5 plus short windows of operation available during weekends for the net settlement of retail systems.⁵¹
- In China, Cross-Border Interbank Payment System (CIPS) is used to process international RMB payments and currently operates 24x5. CIPS, when fully operational, will facilitate round-the-clock RMB-denominated trade and investment transactions, and 24-hour trading of RMB.⁵²
- In December 2020, India expanded operating hours of its existing large-value RTGS payment system to a 24x7 model.⁵³ In order to facilitate swift and seamless payments in real time for various businesses and financial institutions, the Reserve Bank of India (RBI) decided to make available the RTGS system round the clock. The RBI notes that India will be among very few countries globally with a 24x7 large-value real time

⁴⁹ While providing 24x7 settlement in central bank money, the Federal Reserve's new FedNow Service is anticipated to only support domestic payments upon launch in 2023 and to only support low-value transactions (likely up to \$100k per transaction similar to the Clearing House's RTP service).

⁵⁰ See Bank of England, RTGS Renewal Programme, available at <https://www.bankofengland.co.uk/payment-and-settlement/rtgs-renewal-programme>.

⁵¹ See Bank of England, Functionality of the new RTGS service, available at <https://www.bankofengland.co.uk/payment-and-settlement/rtgs-renewal-programme/functionality-of-the-new-rtgs-service>.

⁵² See SWIFT, Beyond borders: China opens up to the world (June 2019), available at <https://www.swift.com/node/227391>.

⁵³ See Reserve Bank of India, 24x7 Availability of Real Time Gross Settlement (RGS) System (Dec. 4, 2020), available at <https://rbidocs.rbi.org.in/rdocs/notification/PDFs/RTGS24X71798171F014C4AF18C755BAA2AECE838.PDF>

payment system which will facilitate innovation in payments and promote ease of doing business.⁵⁴

The Committee on Payments and Market Infrastructure is also conducting work on enhancing critical payment and market infrastructures to tackle the key frictions underlying the challenges in cross-border payments, including varying operating hours.⁵⁵ This work also aligns with the Financial Stability Board's (FSB) "Enhancing Cross-Border Payments: Stage 3 Roadmap" Focus Area C: Improving existing payment infrastructures and arrangements to support the requirements of the cross-border payments market.⁵⁶

The PRC and the Expanded Hours WG will continue monitoring key international developments and include observations in future analyses of expanded hours considerations if deemed appropriate.

⁵⁴ WG members with operations in India discussed the RTGS 24x7 rollout with colleagues in the region who identified similar observations as the considerations outlined in this white paper.

⁵⁵ Victoria Cleland, Exec. Dir., Banking, Payments and Innovation Speech at the Central Bank Payments Conference Cross-Border Payments: Innovating in a Changing World (Oct 13, 2020), *available at* <https://www.bankofengland.co.uk/-/media/boe/files/speech/2020/cross-border-payments-innovating-in-a-changing-world-speech-by-victoria-cleland.pdf?la=en&hash=FBF3252AC96FC5CF764FFE41F1148BD5B584F0BE>

⁵⁶ See: <https://www.fsb.org/2020/10/enhancing-cross-border-payments-stage-3-roadmap/>

Appendix III: Relevant Fedwire and FedNow Product Specifications

Fedwire Funds Service

The Fedwire® Funds Service is a real-time gross settlement (RTGS) system that enables participants (Fedwire participants) to make payments with immediate finality using their balances held at Reserve Banks or intraday credit provided by those Reserve Banks (i.e., by using what would be considered central bank money in either case).⁵⁷ Fedwire is used for time-critical payments, such as the settlement of commercial payments, interbank liabilities, monetary policy implementation, for the funding of other systemically important FMIIs (including other payment systems), and other financial market transactions.

Fedwire processes and settles payment orders individually in real time. Fedwire participants can send up to one penny less than \$10 billion in a single transaction. Fedwire operates 22 hours (starting March 2021) each business day beginning at 9:00 p.m. Eastern Time (ET) on the preceding calendar day and ending at 7:00 p.m. ET (starting March 2021) on each business day, Monday through Friday, excluding designated holidays.⁵⁸ Not all Fedwire participants are required to be, nor are active at 9:00 p.m. ET.

FedNow Service⁵⁹

The FedNow Service (FedNow), targeted for release date in 2023,⁶⁰ will be available to depository institutions in the United States and will enable individuals and businesses to send instant payments through their depository institution accounts 24x7. The service is intended to be a flexible, neutral platform that supports a broad variety of instant payments and provides interbank clearing and settlement in near real-time and at any time, any day of the year.

FedNow will be designed to maintain uninterrupted 24x7 processing. The service will have a 24-hour business day each day of the week, including weekends and holidays. End-of-day balances will be reported on Federal Reserve accounting records for each FedNow participant on each FedNow business day. FedNow's business day will align with the Fedwire Funds Service

⁵⁷ See Federal Reserve Banks, Fedwire Funds Service Disclosure (Dec. 23, 2019), available at

<https://www.frbervices.org/assets/financial-services/wires/funds-service-disclosure.pdf>

⁵⁸ See The Federal Reserve, Wholesale Services Operating Hours and FedPayments® Manager Hours of Availability, available at <https://www.frbervices.org/resources/financial-services/wires/operating-hours.html>.

⁵⁹ See Board of Governors of the Federal Reserve System, FedNow Service, available at https://www.federalreserve.gov/paymentsystems/fednow_about.htm.

⁶⁰ See Press Release, The Federal Reserve, Federal Reserve updates FedNow Service launch to 2023 (Feb. 2, 2021), available at <https://frbervices.org/news/press-releases/020221-federal-reserve-updates-fednow-service-launch-to-2023.html>.

business day.⁶¹ Access to intraday credit will be provided to FedNow participants during its business day under the same terms and conditions as for other Federal Reserve services.⁶²

The first release of FedNow will also include optional features: fraud prevention tools, the ability to join initially as a receive-only participant, request for payment capability, and tools to support participants in their handling of payment inquiries. The service will be released in phases and additional features and service enhancements will be introduced over time.⁶³

⁶¹ As described in the August 2020 FedNow announcement, “for the purpose of the Reserve Banks’ accounting processes, transactions processed after the FedNow Service’s close but before midnight eastern time each calendar day would be recorded on Federal Reserve accounting records as transactions occurring on the next calendar day.” The Federal Reserve indicated that “[t]his approach mirrors the approach used by the Reserve Banks for recording Fedwire Funds Service transactions that occur after the service’s opening at 9 p.m. ET and before midnight ET, where these transactions are recorded as occurring on the next business day.”

⁶² See The Federal Reserve Financial Services, FedNow Service, *available at*

<https://www.frbservices.org/assets/financial-services/fednow/fednow-product-sheet.pdf>.

⁶³ For more information, *see* the description on the Reserve Banks’ publicly available financial services website, *available at*: <https://www.frbservices.org/financial-services/fednow/what-is-fednow.html>.