



Fedwire[®] Funds Service Disclosure

Responding FMI:

Jurisdiction in which the FMI operates:

Authority regulating, supervising, or
overseeing the FMI:

Date of this disclosure:

Fedwire Funds Service

United States of America

Board of Governors of the
Federal Reserve System

December 1, 2023

This disclosure can also be found at FRBservices.org.

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I. Executive Summary

In April 2012, the Committee on Payments and Market Infrastructures (CPMI), then known as the Committee on Payments and Settlement Systems (CPSS),¹ and the Technical Committee of the International Organization of Securities Commissions (IOSCO) published the *Principles for Financial Market Infrastructures* (PFMI) to establish a uniform set of international risk management standards applicable to all systemically important financial market infrastructures (FMIs).² The stated public policy objectives of the PFMI include promoting financial stability, reducing systemic risk posed by FMIs to domestic and global financial systems, and encouraging FMI transparency to participants. CPSS and IOSCO then published in December 2012 *Principles for Financial Market Infrastructures: Disclosure Framework and Assessment Methodology* to assist FMIs in their application of the PFMI and to facilitate consistent disclosure of information by FMIs.³ This disclosure for the Fedwire Funds Service, a real-time gross settlement (RTGS) system owned and operated by the Federal Reserve Banks of the Federal Reserve System (Reserve Banks), follows the disclosure framework set forth in that report.

The Board of Governors of the Federal Reserve System (Board of Governors) incorporated principles 1 through 24 of the PFMI into part I of the Federal Reserve Policy on Payment System Risk (the PSR policy).⁴ As stated in the PSR policy, the Board of Governors requires the Reserve Banks' Fedwire Funds Service to meet or exceed the risk management standards set forth in part I of the PSR policy, consistent with the guidance in the PFMI on central bank-operated systems and with the requirements in the Monetary Control Act.⁵

The PFMI recognize that FMIs operated by central banks might need to tailor the application of certain principles in light of their own governance requirements and policy mandates.⁶ Furthermore, in its incorporation of principles 1 through 24 of the PFMI through the PSR policy, the Board of Governors also recognized that certain principles might require flexibility in the way

¹ Effective September 1, 2014, CPSS changed its name to CPMI.

² Committee on Payment and Settlement Systems & Technical Committee of the International Organization of Securities Commissions, *Principles for Financial Market Infrastructures* (Apr. 2012), available at <http://www.bis.org/cpmi/publ/d101a.pdf>. FMIs include central securities depositories (CSDs), securities settlement systems (SSSs), central counterparties (CCPs), payment systems, and trade repositories (TRs).

³ Committee on Payment and Settlement Systems & Board of the International Organization of Securities Commissions, *Principles for Financial Market Infrastructures: Disclosure Framework and Assessment Methodology* (Dec. 2012), available at <http://www.bis.org/cpmi/publ/d106.pdf>.

⁴ Board of Governors of the Federal Reserve System, Federal Reserve Policy on Payment System Risk (as amended effective July 20, 2023), available at https://www.federalreserve.gov/paymentsystems/files/psr_policy.pdf. The Board of Governors has noted that, in applying part I of the PSR policy, it would be guided by the key considerations and explanatory notes in the PFMI. *Id.*

⁵ *Id.*

⁶ Principles for Financial Market Infrastructures, *supra* note 2, ¶ 1.23. This was further developed and clarified in a note released by the CPMI and the board of IOSCO in August 2015. See Committee on Payments and Market Infrastructures & Board of the International Organization of Securities Commissions, *Application of the Principles for Financial Market Infrastructures to Central Bank FMIs* (Aug. 2015), available at <http://www.bis.org/cpmi/publ/d130.pdf>.

they are applied to the Fedwire Funds Service.⁷ Instances in which this flexibility is important in applying a particular principle are identified in the disclosure below.

⁷ PSR policy, *supra* note 4, n.19.

II. Summary of Major Changes Since the Last Update of the Disclosure

The Reserve Banks last published a version of this disclosure in November 2021. Since that time, an addendum to the disclosure was published in December 2022 outlining ongoing changes underway to consolidate and centralize governance and management of all Reserve Bank financial products and services, including the Fedwire Funds Service. The following major changes to the Fedwire Funds Service's organization, services, design, rules, markets served, or regulatory environment have occurred:

- In November 2020 a new enterprise construct was approved by the Federal Reserve Banks' Conference of Presidents (COP) and implemented on July 1, 2022. The Wholesale Product Office (WPO) headquartered at the Federal Reserve Bank of New York (FRBNY), which was responsible for the Fedwire Funds Service, was dissolved, and management of the Fedwire Funds Service is now performed by the Reserve Banks collaboratively through the new Federal Reserve Financial Services (FRFS) national business line, a cross-District organizational model (see Section III. B. and Principle 2.2). This new FRFS structure was approved by each Reserve Banks' board of directors in mid-2022.
- The 12 Reserve Banks agreed to the FRFS Enterprise Principles to set responsibility and accountability of FRFS and the chief payments executive (CPE) in the development, management, and operations of Federal Reserve financial services, including the Fedwire Funds Service (see Principle 2.2). The FRFS Enterprise Principles also establish the FRFS governance Framework, including the oversight role of the COP's Payments Committee (PC) (see Section III. B. and Principle 2.2).
- With the transition, the FRFS risk management framework replaced the FRBNY's risk management framework as applicable to the Fedwire Funds Service and the FRFS risk team assumed second line risk management responsibilities (see Principle 3.1).
- The Board of Governors issued Guidelines for Evaluating Account and Services Requests that establish a transparent, risk-based, and consistent set of factors for Reserve Banks to use in reviewing requests to access Federal Reserve accounts and payment services (see Principle 18.2).

III. General Background of the Fedwire Funds Service

A. General Description

The Fedwire Funds Service is a real-time gross settlement system that enables participants to make final payments 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). Every Fedwire Funds Service participant must maintain a master account at a Reserve Bank.⁸ As the operational arm of the central bank of the United States, the Reserve Banks play several roles in the payment and securities settlement systems of the United States, including owning and operating the Fedwire Funds Service. As an RTGS system for the United States and the U.S. dollar, the Fedwire Funds Service plays a critical role in the implementation of United States monetary policy through the settlement of domestic open-market operations and as the primary mechanism through which depository institutions transfer balances into and from their master accounts to meet reserve requirements, if applicable or to respond to changes in the rate of interest the Reserve Banks pay on reserve balances. The Fedwire Funds Service is also used for time-critical payments, such as the settlement of commercial payments, interbank liabilities, and other financial market transactions, as well as for the funding of other systemically important FMs and payment systems.

Core Services and Functions

The Fedwire Funds Service processes and settles payment orders individually in real time throughout the operating day. Participants can send up to one penny less than \$10 billion in a single transaction. Payment to the receiving participant over the Service is final and irrevocable when the amount of the payment order is credited to the receiving participant's account or when a payment order is sent to the receiving participant, whichever is earlier. Participants of the Fedwire Funds Service send payment orders to a Reserve Bank online by initiating an electronic message or offline through the telephone. Reserve Banks send payments orders to Fedwire Funds Service participants as advices of credit by electronic message or telephone. To be accepted by a Reserve Bank, payment orders must be in the proper syntax and meet the relevant security controls.

Two types of Fedwire Funds Service value transfers (i.e., bank-to-bank transfers and third-party transfers) are used to handle a variety of time-critical payments. Bank-to-bank transfers are typically used for critical prefunding, intraday funding, and end-of-day settlement transactions for other payment systems. Third-party transfers are transactions in which the originator or the beneficiary (or both) is not a Fedwire Funds Service participant. Third-party transfers are used for a range of payments, from loan closings to tax payments. Participants may also send nonvalue messages through the Service, such as requests to reverse a transfer, to draw down a line of credit, or to inquire about or provide additional information in connection with earlier transfer messages.

⁸ A master account is a record of financial rights and obligations of an account holder and the Reserve Bank maintaining the account with respect to one another, where opening, intraday, and closing balances are determined. See Federal Reserve Banks, Operating Circular 1, *Account Relationships*, § 2.2(l), available at <https://www.frbervices.org/binaries/content/assets/crsocms/resources/rules-regulations/090123-operating-circular-1.pdf>. Financial institutions are generally permitted to have just one master account. *Id.* § 2.3.

Subpart B of the Board of Governors' Regulation J,⁹ which incorporates Article 4A of the Uniform Commercial Code (UCC), and Operating Circular 6, *Funds Transfers Through the Fedwire Funds Service*,¹⁰ govern the use of the Service. Although Regulation J allows a Reserve Bank to reject a payment order for any reason, payment orders are generally accepted as long as security procedures are met and messages conform to the proper message format. If an institution is being monitored by the Reserve Banks' account balance monitor (for more detail, see Principle 4, *Credit risk*), the institution must also have available funds or overdraft capacity to make the transfer. An institution that has a payment order rejected is usually informed of the rejection immediately. The intended receiving institution is not made aware of the rejection.

Article 4A, as set out in Regulation J, provides a comprehensive set of rules for funds transfers over the Fedwire Funds Service, including the following areas:

- The timing and enforceability of payment orders;
- The effect of security procedures for verifying payment orders;
- Liability for erroneous payment orders (including misdescription of the intended beneficiary's name or account number);
- The timing of acceptance of payment orders;
- Rejection of payment orders;
- Cancellation and amendment of payment orders;
- The obligations of a bank in executing an accepted payment order;
- Liability of a receiving bank for erroneous or delayed execution of a payment order;
- The sender's duty to notify the receiving bank with respect to an erroneously executed payment order;
- The obligation of a sender to pay a receiving bank for an accepted payment order; and
- The obligation of a beneficiary's bank to pay the beneficiary.

Market Overview

In the United States, funds transfers can be carried out through a variety of means. They can be effected using internal or proprietary systems of correspondent banks. They can be conducted by financial messaging systems like the FIN service of the Society for Worldwide Interbank Financial Telecommunication (SWIFT). They may also be made through other types of funds-transfer systems that combine financial messaging capabilities with the ability to settle interbank obligations. In the United States, two funds-transfer systems are generally considered to fall in the category of large-value payment systems (LVPS): the Fedwire Funds Service and the CHIPS® funds-transfer system. The PFMI define an LVPS to be a "funds transfer system that typically handles large-value and high-priority payments."¹¹ While the Fedwire Funds Service is generally considered an LVPS, the Service can process funds transfers of any value (from \$0.01 to one cent short of \$10 billion) and frequently handles what are considered "retail" payments (i.e., funds transfers that are not interbank transfers). Retail payments include funds transfers sent by or to depository institution on behalf of consumers.

⁹ See 12 CFR §§ 210.25–32.

¹⁰ See Federal Reserve Banks, Operating Circular 6, *Funds Transfers Through the Fedwire Funds Service*, available at [Operating Circular No. 6 \(frb.org\)](https://www.frb.org/operating-circulars/operating-circular-6)

¹¹ Principles for Financial Market Infrastructures, *supra* note 2, at 177.

The Fedwire Funds Service, provide RTGS services to participants of the Service. Eligible participants may access the Fedwire Funds Service directly or use a service provider to manage their activity over the Service. Over 4,600 customers can initiate or receive funds transfers over the Fedwire Funds Service. As noted in table 1, in 2022, the Service processed an average daily volume of 784,209 transactions, with a daily average value of about \$4.2 trillion, and an average transfer value of about \$ 5.41 million. Use of the Service, however, is highly concentrated among the top 10 participants in terms of volume.

CHIPS is owned and operated by The Clearing House Payments Company L.L.C. CHIPS is not exclusively a gross settlement system. Instead, CHIPS processes some payment orders individually and others using a liquidity-saving algorithm that nets certain settlement obligations bilaterally or multilaterally.¹² Settlement of payment orders is final when the CHIPS application releases payment orders from its message queue.¹³ On average, the value of transactions that the Fedwire Funds Service processes each business day is approximately twice the value of transactions that CHIPS processes daily.¹⁴

Key Statistics

The following are key 2022 volume and value statistics for the Fedwire Funds Service:

Table 1: Fedwire Funds Service Key Statistics

Fedwire Funds Service Key Statistics	
2022 Annual Data	
Transfers originated (number)	196,052,238
Value of transfers originated (millions)	\$1,060,257,294
Average value per transfer (millions)	\$5.41
Average daily volume of transfers originated (number)*	784,209
Average daily value of transfers originated (millions)*	\$4,241,029

Source: <https://www.frbservices.org/resources/financial-services/wires/volume-value-stats/annual-stats.html>.

Note: All figures are based on the total number of value transfers originated; nonvalue messages (e.g., requests for reversals, service messages) are not included.

*Based on the number of business days in 2022.

¹² See The Clearing House Payments Company L.L.C., CHIPS Rules and Administrative Procedures, §§ 13(a)–(b) (Effective Feb. 20, 2023), available [https://media.theclearinghouse.org/-/media/New/TCH/Documents/Payment-Systems/CHIPS Rules and Administrative Procedures 02-20_2023.pdf?rev=8aa38f84713d40f1aebaf30dd2fef130](https://media.theclearinghouse.org/-/media/New/TCH/Documents/Payment-Systems/CHIPS_Rules_and_Administrative_Procedures_02-20_2023.pdf?rev=8aa38f84713d40f1aebaf30dd2fef130).

¹³ *Id.* §§ 2(d), § 13(a)–(b).

¹⁴ As of April, 2023, CHIPS had 43 participants. The Clearing House Payments Company L.L.C., Helpful Information, available at <http://www.theclearinghouse.org/payment-systems/chips>. In 2023, CHIPS processed and settled on an average business day 535,553 payment orders, with an aggregate value of approximately \$1.8 trillion; the average value of a payment order was \$3.45 million. The Clearing House Payments Company L.L.C., CHIPS Annual Statistics from 1970 to 2023, available at [chips volume value YTD April 2023.pdf \(theclearinghouse.org\)](https://www.theclearinghouse.org/chips-volume-value-YTD-April-2023.pdf).

B. General Organization of the Fedwire Funds Service

How the Reserve Banks carry out their responsibilities for providing financial services, including the Fedwire Funds Service, is largely dictated by federal law and Board of Governors' policies. The 12 Reserve Banks manage financial services collaboratively, including the day-to-day development, management, and operations, through a new national business line named the Federal Reserve Financial Services (FRFS). This move toward a new enterprise construct was approved by the Federal Reserve Banks' Conference of Presidents (COP) in November 2020 and implemented on July 1, 2022.¹⁵ The Wholesale Product Office (WPO) headquartered at the Federal Reserve Bank of New York (FRBNY), which was responsible for wholesale services,¹⁶ including the Fedwire Funds Service, was dissolved.

FRFS, a cross-District organization model led by a chief payments executive (CPE), is responsible for the day-to-day management of the Fedwire Funds Service. As further discussed in Principle 2, *Governance*, in managing the Service, FRFS is responsible to a number of Federal Reserve stakeholders, including the COP and its Payments Committee (PC), Reserve Bank Boards of Directors, and the Board of Governors in its role as supervisor of the Reserve Banks.

The Reserve Banks agreed to new FRFS Enterprise Principles, which, along with actions by the COP and the Reserve Bank boards of directors, establish governance and management responsibility as well as accountability for FRFS senior leadership with respect to the Reserve Banks' financial services.

C. Legal and Regulatory Framework

Ownership Structure

The Federal Reserve System was created by an act of Congress in 1913 to provide the nation with a safer, stabler, and more flexible monetary and financial system and to serve as the central bank of the United States. It is composed of 12 regional Reserve Banks, the Board of Governors, and the Federal Open Market Committee.¹⁷ Member banks must subscribe to stock in their regional Reserve Bank. Although each Reserve Bank is owned by its member institutions, the legal organization of the Reserve Banks includes elements of both public and private accountability. Each Reserve Bank has its own board of directors, representing public and private interests, including directors appointed by the Board of Governors, as well as directors elected by member banks in that Federal Reserve district.

For more detail on the governance of the Reserve Banks, see Principle 2, *Governance*.

Legal Structure

¹⁵ Among other things, the COP, which is made up of the presidents of each Reserve Bank, meets to discuss issues of strategic interest to the Federal Reserve System and to discuss matters of common concern to the Reserve Banks.

¹⁶ In this document, wholesale services refer to the Reserve Banks' Fedwire Services, comprised of the Fedwire Funds Service and the Fedwire Securities Service.

¹⁷ For more detail on the Federal Reserve System, see Board of Governors of the Federal Reserve System, *The Fed Explained: What the Central Bank Does* (11th ed. 2021), available at <https://www.federalreserve.gov/aboutthefed/the-fed-explained.htm>.

U.S. law provides a comprehensive, well-established, and publicly disclosed legal framework for funds transfers made over the Fedwire Funds Service. The statutes, regulations, and contractual provisions that constitute the legal framework for the Fedwire Funds Service clearly define the rights and obligations of each party to Fedwire funds transfers. The legal framework provides participants a high degree of legal assurance of the settlement and finality of funds transfers made over the Fedwire Funds Service.

General Statutes and Regulations

Federal statutes and regulations promulgated pursuant to those statutes provide the essential legal framework for the Fedwire Funds Service. These statutory and regulatory authorities, in concert with contractual provisions governing the Service, provide a comprehensive set of rules and define the rights and obligations of participants and the Reserve Banks with a high degree of certainty.

Federal Reserve Act

Several sections of the Federal Reserve Act provide the legal basis for operating the Fedwire Funds Service. The act permits a Reserve Bank to receive deposits from any of its member banks or other depository institutions and to receive deposits from other Reserve Banks for purposes of exchange or collection.¹⁸ The act also recognizes that the Reserve Banks are authorized to provide specified priced services, including funds transfer and settlement services.¹⁹

The Federal Reserve Act further empowers the Board of Governors to promulgate regulations governing the transfer of funds among Reserve Banks and also permits the Board to require each Reserve Bank to exercise the functions of a clearinghouse for depository institutions.²⁰ The act also charges the Board with exercising general supervision over the Reserve Banks and authorizes the Board to make all rules and regulations necessary to enable the Board to perform effectively its duties, functions, or services as specified in the act.²¹

Under the Monetary Control Act of 1980, which amended the Federal Reserve Act, the Fedwire Funds Service is among the Reserve Bank financial services required to be priced to fully recover, over the long run, all direct and indirect costs, certain imputed costs, and a return on equity that would have been earned if a private-sector firm provided the services.²² In discharging its responsibilities under the Monetary Control Act, the Board of Governors, among other things, adopted a set of standards related to the Reserve Banks' priced-services activities that are designed in part to ensure fairness to private-sector providers of financial services.²³

¹⁸ Federal Reserve Act § 13(1) (12 USC § 342).

¹⁹ See Federal Reserve Act § 11A (12 USC § 248a).

²⁰ Federal Reserve Act § 16(14) (12 USC § 248-1).

²¹ Federal Reserve Act §§ 11(j) (general supervision over Reserve Banks) (12 USC § 248(j)), 11(i) (authority to promulgate rules and regulations) (12 USC § 248(i)).

²² Federal Reserve Act § 11A (12 USC § 248a). The Monetary Control Act is discussed in more detail in section 15.1.

²³ See Board of Governors of the Federal Reserve System, Standards Related to Priced-Service Activities

These standards require the Reserve Banks' monetary policy, financial institution supervision, and lending functions to be handled by Reserve Bank employees that are separate from the employees that provide Reserve Bank financial services, such as the Fedwire Funds Service, to help avoid an actual or apparent conflict that might arise between the Reserve Banks' provision of financial services and one of the other functions.²⁴

Regulation J

Based on the statutory authority cited above, the Board of Governors promulgated subpart B (Funds Transfers Through Fedwire) of its Regulation J.²⁵ Subpart B delineates the rights and responsibilities of parties to funds transfers made over the Fedwire Funds Service. As federal law, Regulation J preempts any inconsistent provisions of the laws of U.S. states and territories.

Subpart B of Regulation J incorporates Article 4A of the UCC, which is set out as appendix A to Regulation J.²⁶ In addition, an official commentary to subpart B is set out as appendix A to subpart B. The commentary constitutes an official Board interpretation of subpart B and provides background material to explain the intent of the Board in adopting particular provisions of subpart B.

Subpart B of Regulation J governs the rights and obligations of parties to a Fedwire funds transfer, including Reserve Banks sending or receiving payment orders, "senders" that send payment orders directly to a Reserve Bank, "receiving banks" that receive advices of credit directly from a Reserve Bank, and "beneficiaries" that receive payment for payment orders sent to a Reserve Bank by means of a credit to an account maintained or used at a Reserve Bank.²⁷ Regulation J also applies to other parties to funds transfers that might be carried out, in whole or in part, through the Fedwire Funds Service if those parties were given notice that the Fedwire Funds Service might be used to complete the transfers.

Under subpart B of Regulation J, by maintaining or using an account with a Reserve Bank, a sending bank authorizes its Reserve Bank to obtain payment for the sender's payment order by debiting the amount of the payment order from the sender's Reserve Bank account. In addition,

of the Federal Reserve Banks, *Federal Reserve Regulatory Service* 9–1569 to –1572 (1984), available at http://www.federalreserve.gov/paymentsystems/pfs_standards.htm.

²⁴ *Id.* at 9–1569 to –1570.

²⁵ See 12 CFR §§ 210.25–210.32.

²⁶ Article 4A of the UCC was developed and endorsed by the National Conference of Commissioners on Uniform State Laws, which is now known as the Uniform Law Commission (ULC), in conjunction with the American Law Institute, in 1990. The ULC, formed in 1892, is a nonprofit association of legal experts from each state, the District of Columbia, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands. The ULC studies the laws of the states to determine which areas of law should be uniform nationwide and promotes the principle of uniformity by drafting and proposing specific statutes in areas of law where uniformity between the states is desirable. The ULC can only propose uniform or model statutes; no uniform or model law is effective until a body with rulemaking authority, such as a state legislature or federal agency, adopts it. The Board adopted as part of Regulation J the version of Article 4A endorsed by the ULC. Because Article 4A also has been adopted by the 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands largely in its uniform form, there does not tend to be a conflict between the law governing Fedwire transfers and those governing other funds transfers. The U.S. territory of Guam has not adopted Article 4A.

²⁷ Refer to subpart B of Regulation J for the definition of the terms in quotation marks.

a bank that receives an advice of credit from a Reserve Bank authorizes that Reserve Bank to pay the bank by crediting the amount of the advice of credit to the bank's account at that Reserve Bank.

Governing Agreements

Subpart B of Regulation J directs each Reserve Bank to issue an operating circular consistent with subpart B that governs the details of its funds-transfer operations. Operating Circular 6 has been issued in identical form by all Reserve Banks. It is a contract between a Reserve Bank and each Fedwire Funds Service participant that holds a master account on that Reserve Bank's books. Like Regulation J, Operating Circular 6 supersedes inconsistent provisions of Article 4A.²⁸

Operating Circular 1, *Account Relationships*, governs master accounts. Each Fedwire Funds Service participant is required to have a master account. Operating Circular 1 states that every master account is subject to Federal Reserve regulations and policies, including, specifically, the PSR policy.²⁹

Other Applicable Laws

Insolvency Law

U.S. depository institutions and U.S. branches and agencies of foreign banks are subject to the liquidation provisions of applicable federal, state, or territorial banking laws. The liquidation provisions of U.S. banking laws do not contain a zero-hour rule that would have the effect of voiding a settled funds transfer made over the Fedwire Funds Service involving an insolvent participant. Under U.S. banking law, payment from a sender to a receiver over the Fedwire Funds Service would not be affected by the subsequent insolvency of a participant unless a court finds the payment void after the fact as a fraudulent transfer or unlawful preference or due to other inequitable conduct. Such determinations, however, would be unrelated to the finality of a funds transfer made through the Fedwire Funds Service or of settlement for payment orders related to that funds transfer. Absent inequitable conduct on the part of a receiving bank, the receiving bank executing the payment order should not be implicated by such determinations, which only affect the discharge of the obligations as between the originator and the beneficiary.

Laws of Non-U.S. Jurisdictions

Disputes over a Fedwire funds transfer involving direct Fedwire Funds Service participants are governed by U.S. law. While it is possible that a foreign court could decline to apply U.S. law, that outcome is unlikely given that Fedwire funds transfers are made on the books of the Reserve Banks in the United States, nearly all direct Fedwire Funds Service participants are U.S.-chartered or -licensed entities, and all agreements with participants are governed by U.S. law.³⁰ In case of insolvency, U.S. jurisdictions employ a territorial or "separate entity" liquidation

²⁸ See 12 CFR § 210.25(b)(1); UCC § 4A-107 (as incorporated into 12 CFR pt. 210, app. B).

²⁹ Part II of the PSR policy, *supra* note 4, governs Reserve Bank intraday credit.

³⁰ Except in limited circumstances, foreign banking organizations are only permitted to access the Fedwire Funds Service through branches, agencies, or affiliates established in the United States. The Reserve Banks permit participants to maintain electronic access to the Fedwire Funds Service from

scheme, in which a foreign bank's U.S. offices are liquidated in a proceeding under U.S. law separate from the liquidation of the foreign bank in its home country. It is unnecessary to analyze whether the home-country laws of a foreign-incorporated participant recognize netting arrangements in an insolvency context because the Fedwire Funds Service, as an RTGS system, is not a netting system.

Miscellaneous

Other U.S. statutes and regulations can affect Fedwire funds transfers. These include, for example, Office of Foreign Assets Control regulations relating to economic sanctions, the Expedited Funds Availability Act relating to the availability of electronic funds transfers deposited in transaction accounts, the Electronic Fund Transfer Act relating to certain consumer electronic funds transfers, the Bank Secrecy Act relating to anti-money-laundering and record-keeping requirements, and the USA PATRIOT Act relating to the expansion of law enforcement investigatory tools to counter terrorism.

Supervisory and Oversight Framework

The Federal Reserve Act charges the Board of Governors with exercising general supervision over the Reserve Banks, including with respect to the operation of the Fedwire Funds Service, and authorizes the Board of Governors to adopt rules and regulations necessary to enable the Board of Governors to perform effectively its duties, functions, or services as specified in the act.³¹ The Board of Governors has publicly recognized the critical role the Fedwire Funds Service plays in the financial system and has implemented a supervisory framework for the Fedwire Funds Service that includes requirements that are comparable to, or exceed, those placed on similar private-sector FMI's.³² The Board of Governors exercises this oversight in three ways—application of risk management standards; an examination process; and review of the Fedwire Funds Service's key strategic initiatives, price and service terms, and proposed material changes to the Service.

Part I of the PSR policy, which incorporates the risk management and transparency standards in the PFMI, applies to both Reserve Bank and certain private-sector systems.³³ The risk management and transparency standards in the PSR policy are consistent with those in Regulation HH, which apply to payment, clearing, and settlement systems (also known as financial market utilities) designated as systemically important by the Financial Stability Oversight Council and for which the Board of Governors has standard-setting authority under

outside the United States in certain circumstances (typically involving the use of an overseas-based service provider, which is often an affiliate or, in the case of U.S. branches or agencies of foreign banks, the parent bank in the home country). These foreign electronic-access arrangements are governed by U.S. law by agreement, and they do not affect the applicability of U.S. law to Fedwire funds transfers because each participant's account remains in the United States and the Reserve Banks continue to send and receive payment orders to and from participants in the United States.

³¹ Federal Reserve Act §§ 11(j) (general supervision over Reserve Banks) (12 USC § 248(j)), 11(i) (authority to promulgate rules and regulations) (12 USC § 248(i)).

³² Board of Governors of the Federal Reserve System, Policy on Payment System Risk, 79 Fed. Reg. 67326, 67332 (Nov. 13, 2014).

³³ See PSR policy, *supra* note 4, at 7-9.

title VIII of the Dodd-Frank Act.³⁴ The Board of Governors expects the Fedwire Funds Service to meet or exceed the applicable standards set forth in part I of the PSR policy.³⁵ In addition, the Board of Governors expects the Reserve Banks to regularly update this disclosure following changes to the Fedwire Funds Service or the environment in which it operates that would significantly affect the accuracy of the statements in this disclosure.³⁶ At a minimum, the Board has stated that such disclosures should be updated every two years.³⁷

The Board of Governors conducts examinations of the Reserve Banks' Fedwire Funds Service, and it monitors the Service's operations and initiatives through reports, discussions with Reserve Bank management, and its liaison roles on various Reserve Bank committees. The rigor of the Board of Governors' Fedwire Funds Service examination process is comparable to, or exceeds, that of the process used by Federal Reserve supervisors for designated financial market utilities.

In reviewing proposed material changes to the Fedwire Funds Service rules, procedures, and operations, the Board of Governors also holds the Reserve Banks to procedural requirements that are the same as, or higher than, the requirements for designated financial market utilities it supervises.³⁸ For example, the Board of Governors reviews, and has the opportunity to object to, any changes to Reserve Bank operating circulars. The Board of Governors also approves the Reserve Banks' budgets, including FRFS and budgets related to the Fedwire Funds Service, and approves major Reserve Bank strategic initiatives. Furthermore, the Board of Governors approves and publishes in the Federal Register the fees the Reserve Banks charge for the Fedwire Funds Service and monitors the Reserve Banks' ongoing compliance with the cost-recovery requirements of the Monetary Control Act.

The U.S. Government Accountability Office (GAO), the investigative arm of Congress, may also examine activities of the Service.³⁹

D. System Design and Operations

Participant Access

Participants access the Fedwire Funds Service online using FedLine Direct[®] Solution (an IP-based computer interface) or FedLine Advantage[®] Solution (web-based access) or through the offline service described below.⁴⁰ Participants conducting larger volumes of funds transfers typically use FedLine Direct, which requires internal or third-party software to interface with the Service. Midsize or smaller participants typically access the Service through FedLine Advantage, using the FedPayments[®] Manager—Funds application to create, send, and receive

³⁴ See 12 CFR § 234.3 (Regulation HH risk management and transparency standards).

³⁵ Policy on Payment System Risk, 79 Fed. Reg. at 67336.

³⁶ See PSR policy, *supra* note 4, at 11.

³⁷ *Id.*

³⁸ *Cf.* 12 CFR § 234.4.

³⁹ See 31 USC § 714.

⁴⁰ Effective December 31, 2024, the offline service will be decommissioned. See further details *available at*: <https://www.frbervices.org/news/communications/091423-fedwire-offline-with-fld-fla-connection>.

payment orders and nonvalue messages. Participants with very low transaction volume typically access the Service through the offline service.

Participants using the offline service submit transfer instructions by telephone to the Reserve Banks. Once the Reserve Bank has authenticated the requested transfer instructions, the transfer message is submitted to the Fedwire Funds Service for execution. Participants can also use the offline service to receive transfer instructions. In 2022, offline transfers accounted for less than 1 percent of all transfers originated over the Service.

Operating Hours

As noted in table 2, the Fedwire Funds Service operates 22 hours each business day beginning at 9:00 p.m. Eastern Time (ET) on the preceding calendar day and ends at 7:00 p.m. ET each business day, Monday through Friday, excluding designated holidays.⁴¹ For example, processing on a nonholiday Monday begins at 9:00 p.m. ET on Sunday and ends at 7:00 p.m. ET on Monday.

Table 2: Operating Hours

As permitted under Operating Circular 6, the Reserve Banks have set cutoff times for various types of messages, including payment orders.⁴²

Type Code	Type of Message	Message Description
10	Customer message	A message in which the originator and/or beneficiary fields identify parties other than depository institutions
15	Special account message	A message that can be sent only to/from prescribed accounts maintained at the Federal Reserve Bank of New York (generally, accounts for foreign central banks and international organizations)
16	Bank message	A message in which the only parties to the funds transfer identified in the message are depository institutions

Online Messages	Eastern Time
Fedwire Funds Service begins processing online nonvalue messages sent using the FedPayments Manager application through the FedLine Advantage Solution	8:35 p.m. ET on the preceding calendar day
Fedwire Funds Service begins processing (1) online payment orders and (2) online nonvalue messages sent through the FedLine Direct Solution	9:00 p.m. ET on the preceding calendar day

⁴¹ A complete time schedule and list of holidays is available on the Reserve Banks' publicly accessible financial services website at <https://www.frbervices.org/resources/financial-services/wires/operating-hours.html>.

⁴² The definition of a "payment order" is in subpart B of Regulation J.

Cutoff time by which online type code 15 messages must be received	5:00 p.m. ET
Cutoff time by which online type code 10 messages must be received	6:45 p.m. ET
Cutoff time by which online type code 16 messages must be received	7:00 p.m. ET
Closing of the Fedwire Funds Service for online messages	7:00 p.m. ET

Offline Messages	Eastern Time
Fedwire Funds Service begins processing offline messages	9:00 a.m. ET
Cutoff time for processing offline type code 15 messages	4:30 p.m. ET
Cutoff time for processing offline type code 10 messages	6:15 p.m. ET
Cutoff time for processing offline type code 16 messages	6:30 p.m. ET
Closing of the Fedwire Funds Service for offline messages	6:30 p.m. ET

At the request of a Fedwire Funds Service participant, the Reserve Banks may extend Service cutoff times or operating hours to accommodate a significant operating problem at a bank or major dealer if the extension is deemed necessary, in the Reserve Banks' view, to prevent a significant market disruption (i.e., the dollar value of delayed transfers exceeds \$3 billion). For an extension to be granted, the requesting participant must make the request at least 15 minutes before the cutoff time. Extensions may also occur if there is a failure of Reserve Bank or Fedwire Funds Service network equipment. The Reserve Banks retain the discretion to shorten or extend a cutoff time or a funds-transfer business day to facilitate special market needs.

Availability

In 2022, the Fedwire Funds Service was available 100 percent of operating hours for all customers, which met the availability target of 99.985 percent of operating hours.

Fedwire Funds Service Transfer Flow

From a legal standpoint, a Fedwire Funds Service sender initiates the Fedwire Funds Service portion of a funds transfer by sending a payment order to the Reserve Bank holding its master

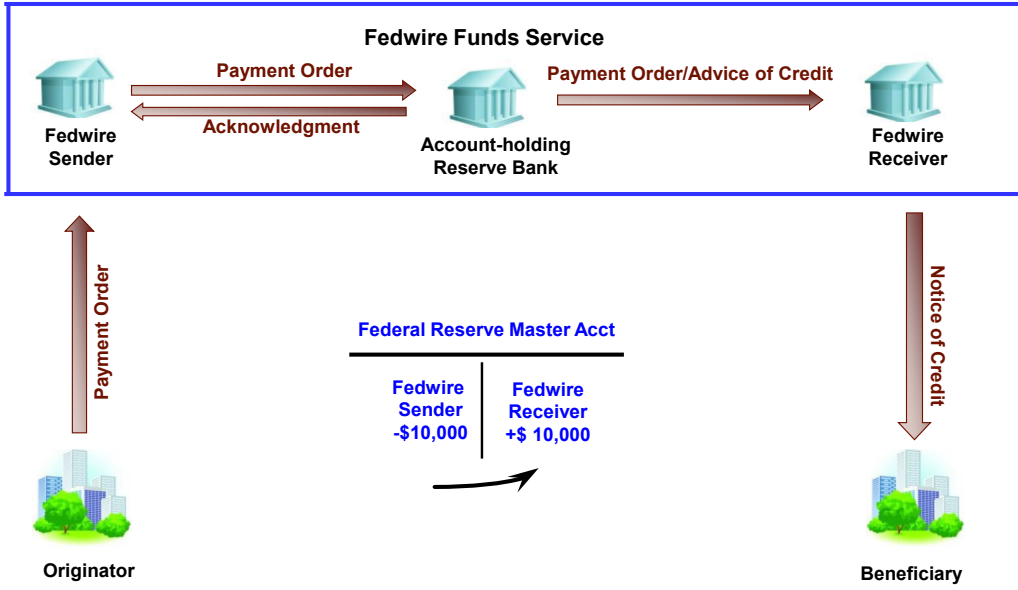
account through one of the Service's access solutions.⁴³ This payment order will instruct that Reserve Bank as a receiving bank to pay or cause another bank to pay the beneficiary identified in the payment order. Under Regulation J, that Reserve Bank is also authorized to debit the sender's master account for the amount of the payment order. As a legal matter, in executing the sender's payment order, the executing Reserve Bank either credits the master account of the participant identified as the Fedwire Funds Service receiver for the amount of the payment order and delivers an advice of credit or, in a case in which the receiver holds an account at another Reserve Bank, will cause that other Reserve Bank to do so.

From an operational standpoint, many of the actions that the Reserve Banks perform as sending or receiving banks in a funds transfer are accomplished by the Fedwire Funds Service as a centralized application developed, managed, and operated by FRFS on behalf of all 12 Reserve Banks. For example, the Fedwire Funds Service processes debits and credits to the master accounts of the senders and receivers over the Service in real time, and the Fedwire Funds Service delivers advices of credit to receivers and acknowledgments to senders in real time. Moreover, the Fedwire Funds Service performs edits to validate the eligibility of the sender and the receiver and to ensure the message is in the proper syntax.

The following diagram illustrates an example of a funds transfer a portion of which is sent through the Fedwire Funds Service. The blue box shows the payment orders that are sent and received to and from the Reserve Banks. Settlement of the Fedwire Funds Service portion of the funds transfer is illustrated by the simple ledger in the center of the diagram. In the example, the Fedwire Funds Service sender is sending \$10,000 on behalf of its customer (i.e., the originator) to the Fedwire Funds Service receiver for further credit to its customer (i.e., the beneficiary), and the sender and receiver have master accounts at the same Reserve Bank.

Even though the Fedwire Funds Service only processes a portion of a funds transfer, the message format for the Fedwire Funds Service contains fields that senders use to provide full details of the funds transfer to the Fedwire Funds Service receiver and other parties to the funds transfer.

⁴³ Under Regulation J and Article 4A, a "funds transfer" is a series of transactions that begins with the issuance of a payment order by the originator and ends when a beneficiary's bank accepts a payment order for the benefit of the beneficiary of the originator's payment order. UCC § 4A-104(a). Accordingly, portions of a funds transfer may occur over a funds-transfer system other than the Fedwire Funds Service even though one portion of the funds transfer is sent through the Service. This disclosure does not address those portions of the funds transfer that are carried out outside the Fedwire Funds Service.



IV. Principle-by-Principle Summary Narrative Disclosure

Principle 1: Legal basis

An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

1.1 The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.

The Fedwire Funds Service is subject to a comprehensive U.S. legal framework that provides a basis for all material aspects of the Service. Several sections of the Federal Reserve Act, as well as subpart B of Regulation J and the Reserve Banks' operating circulars, provide the legal basis for the Reserve Banks to operate the Service and the rights and obligations of parties to a Fedwire funds transfer. The United States is the only relevant jurisdiction for assessing the legal basis of the material aspects of the Reserve Banks' activities in operating the Service because nearly all direct Service participants are U.S.-chartered or -licensed entities, and all agreements with participants are governed by U.S. law.

Subpart B of Regulation J, including its incorporation of Article 4A, provides a comprehensive set of rules for all material aspects of the Fedwire Funds Service, including the following areas:

- the timing and enforceability of payment orders;
- the effect of security procedures for verifying payment orders;
- liability for erroneous payment orders (including misdescription of the intended beneficiary's name or account number);
- timing of acceptance of payment orders;
- rejection of payment orders;
- cancellation and amendment of payment orders;
- obligations of a bank in executing an accepted payment order;
- liability of a receiving bank for erroneous or delayed execution of a payment order;
- the sender's duty to notify the receiving bank with respect to an erroneously executed payment order;
- the obligation of a sender to pay a receiving bank for an accepted payment order;
- the authorization for a Reserve Bank to debit a sender's Reserve Bank master account to obtain payment for an accepted payment order;
- settlement finality; and
- the obligation of a beneficiary's bank to pay the beneficiary.

1.2 An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.

The Reserve Banks and the Board of Governors take a number of steps that help ensure the rules, procedures, and contracts relating to the Fedwire Funds Service are clear, understandable, and consistent with relevant laws and regulations.

The Reserve Banks' operating circulars, which are contracts between a Reserve Bank and an institution that is located within that Reserve Bank's Federal Reserve district, are drafted by Reserve Bank legal counsel. As a matter of practice, each Reserve Bank issues its own operating circulars identical in form to those issued by the other Reserve Banks. This ensures consistent terms for the financial services the Reserve Banks provide nationwide. All proposed

operating circulars and all amendments to existing operating circulars are subject to review by the Board of Governors and the 12 Reserve Banks, including by their respective general counsels.⁴⁴ Through this process, each of the Reserve Banks and the Board of Governors in its capacity as a supervisor of the Reserve Banks help to ensure that the operating circulars remain clear, understandable, and consistent with U.S. law, including subpart B of Regulation J. Moreover, to provide transparency with respect to the terms governing Reserve Bank services, the Reserve Banks publish all operating circulars on the Reserve Banks' publicly accessible financial services website, FRBservices.org.

Subpart B of Regulation J is published in the U.S. Code of Federal Regulations; Regulation J in its current form was promulgated subject to the Administrative Procedure Act's public notice and comment requirements, and any amendments to Regulation J are subject to those same requirements. Moreover, subpart B to Regulation J includes commentary that constitutes an official Board interpretation of subpart B. The Board of Governors also publishes the PSR policy, which governs the availability of intraday Reserve Bank credit to Reserve Bank customers, including Fedwire Funds Service participants, in the Federal Register and invites public comment. The PSR policy is accompanied by a public guide that is designed to assist Reserve Bank customers in complying with the policy. Both subpart B to Regulation J and the PSR policy may also be found on the Board of Governors' website.

1.3 An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.

As described in section III under *Legal and Regulatory Framework*, the Reserve Banks are authorized to operate the Fedwire Funds Service under the Federal Reserve Act, and the Board of Governors promulgated subpart B to Regulation J specifically to provide the legal framework governing the rights and obligations of parties to a funds transfer made through the Service.

The Federal Reserve Act, Regulation J, and Operating Circular 6, which form the legal basis for operating the Fedwire Funds Service, are all publicly available for review by any party to a funds transfer sent through the Service.

1.4 An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.

The rules, procedures, and contracts that govern the Fedwire Funds Service are enforceable under U.S. law. The United States, as described in section 1.1, is the only relevant jurisdiction.

U.S. depository institutions and U.S. branches and agencies of foreign banks are subject to the liquidation provisions of applicable federal, state, or territorial banking laws. In the context of the insolvency of a Fedwire Funds Service participant, under U.S. banking laws, as described in section III above, the actions taken by the Reserve Banks in operating the Service under their rules, procedures, and contracts will not be voided or reversed. Because the Fedwire Funds Service is an RTGS system, the Reserve Banks have not created rules that apply differently if a

⁴⁴ All the Reserve Banks must approve any proposed operating circular or any amendment to an existing one. The Board of Governors, in its supervisory capacity, is given the opportunity to object to any proposed operating circular or amendment.

participant fails. Rather, the Reserve Banks may be exposed to credit risk if a sending participant fails because payment by a Reserve Bank to a receiving participant is final at the earlier of the credit to the receiving participant's master account or when the advice of credit is sent to the receiving participant. See Principle 13, *Participant-default rules and procedures*.

1.5 An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.

The Reserve Banks provide the Fedwire Funds Service only within the United States.⁴⁵ As noted above, subpart B of Regulation J provides a comprehensive set of rules for all material aspects of the Fedwire Funds Service.

⁴⁵ See footnote 30 for a discussion of certain foreign electronic access arrangements.

Principle 2: Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Because the Fedwire Funds Service is a central bank–operated payment system, U.S. law and central bank policies govern the governance framework applicable to the Reserve Banks’ operation of the Service. The PFMI recognize that central bank–operated systems may need to tailor the application of this principle in light of the central bank’s own governance requirements and policy mandates. In its implementation of the PFMI through the PSR policy, the Board of Governors also recognized that this principle may require flexibility in the way it is applied to the Fedwire Funds Service.

2.1 An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.

As noted in the Board of Governors’ policy *The Federal Reserve in the Payments System*, the role of the Federal Reserve in providing financial services, including the Fedwire Funds Service, is to promote the integrity and efficiency of the payments mechanism, to ensure the provision of payment services to all depository institutions on an equitable basis, and to do so in an atmosphere of competitive fairness.⁴⁶ FRFS, which is responsible for the day-to-day management of the Fedwire Funds Service on behalf of all 12 Reserve Banks, develops, manages, and operates the Service consistent with these principles, including setting annual objectives in support of these principles. As outlined in the *Federal Reserve System Guidelines for the Provision of Financial Services*, the Reserve Banks are expected to (i) maintain an operational presence in the provision of financial services where that presence, as a result of cost advantages, would contribute to economic efficiency or where other public-interest considerations might dictate; (ii) be prepared to remove themselves from the provision of those services that the private sector can supply more efficiently, unless there are overriding public-interest reasons for the Reserve Banks to continue offering such services; (iii) maintain the flexibility to change existing services or to offer new ones to meet specialized or evolving needs of financial institutions and the public; (iv) ascertain the needs of financial institutions and the public in order to enhance their service offerings; (v) encourage innovation across financial services; and (vi) provide full information to financial institutions about the nature and scope of the services they offer.⁴⁷

⁴⁶ See Board of Governors of the Federal Reserve System, *The Federal Reserve in the Payments System*, *Federal Reserve Regulatory Service* 9–1550 to –1561 (issued 1984; revised 1990 & 2001), available at http://www.federalreserve.gov/paymentsystems/pfs_frpaysys.htm.

⁴⁷ See Board of Governors of the Federal Reserve System, *Federal Reserve System Guidelines for the Provision of Financial Services*, *Federal Reserve Regulatory Service* 9–1573 (June 1981), available at https://www.federalreserve.gov/paymentsystems/pfs_guidelines.htm. Moreover, under another Board of Governors’ policy, when the Reserve Banks are considering introducing a new service or major service enhancements, all of the following criteria must be met: (i) the Federal Reserve must expect to achieve full recovery of costs in operating the service in question over the long run; (ii) the Federal Reserve must expect that its providing the service will yield benefits to the public, such as promoting the efficiency and integrity of the payments system; and (iii) the service should “be one that other providers alone cannot be expected to provide with reasonable effectiveness, scope, and equity.” See *The Federal Reserve in the Payments System*, *supra* note 46, at 9–1557.

The PC, as required by its charter, considers the criticality of the Fedwire Funds Service to financial stability in its oversight of FRFS. In addition, the documented mission of FRFS is to foster the integrity, efficiency, and accessibility of U.S. payments and settlement systems in support of financial stability and economic growth. Reserve Bank operations, including the management and operation of the Fedwire Funds Service, are subject to the general supervision of the Board of Governors, providing accountability to both the Board and the general public.

2.2 An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.

The governance of Reserve Bank financial services, including the Fedwire Funds Service, is largely dictated by federal law and Board of Governors' policies, both of which are available to the public.⁴⁸ Under the Federal Reserve Act, Regulation J, and Reserve Bank operating circulars, each Reserve Bank offers the Service to legally eligible customers. By agreement among the Reserve Banks, FRFS is responsible for the day-to-day management, operation, support, and ongoing development of Reserve Bank financial services. FRFS is consequently responsible for the daily operational management of the Fedwire Funds Service, subject to the oversight and control of the COP and the supervision of the Board of Governors.

Because the Fedwire Funds Service is operated by FRFS on behalf of all Reserve Banks, when considering governance of the Service, it is necessary to consider both the applicable governance structure for FRFS, as the national business line charged with managing day-to-day Fedwire Funds Service operations, and the governance structure supporting decision-making among the Reserve Banks for those aspects of the Service for which each Reserve Bank retains discretion.

FRFS and Reserve Bank Governance

Under section 4(6) of the Federal Reserve Act and the bylaws of each Reserve Bank, each Reserve Bank's board of directors is responsible for the supervision and control of its respective Bank's activities, including those activities performed in support of the Fedwire Funds Service. The Reserve Bank presidents, as chief executive officers under section 4(4)(*fifth*) of the Federal Reserve Act, are likewise responsible for these activities.⁴⁹

Although each Reserve Bank is a separate legal entity, the Reserve Banks often agree to conduct operations on a centralized or consolidated basis and to implement consistent policies and services. Coordination and cooperation among Reserve Banks is principally organized under the COP, which is composed of the presidents of each Reserve Bank and which among

⁴⁸ Reserve Bank financial services include cash services, check services, automated clearinghouse services, funds-transfer services, securities transfer services, multilateral settlement services, and related support functions, including financial management, customer support, electronic access, and marketing/sales.

⁴⁹ Reserve Bank powers include those specifically granted in the Federal Reserve Act and such incidental powers "as shall be necessary to carry on the business of banking within the limitations prescribed by [the Federal Reserve Act]." Federal Reserve Act § 4(4) (12 USC § 341). Each Reserve Bank president is empowered to make decisions, without special authorization from their Reserve Bank's board of directors, concerning matters that fall within the general business of that Reserve Bank.

other things, meets to discuss issues of strategic interest to the Federal Reserve System and to discuss matters of common concern to the Reserve Banks.⁵⁰

In this regard, in mid-2022, through action by the presidents and boards of directors of each Reserve Bank, the Reserve Banks agreed to deliver Reserve Bank financial services, including the Fedwire Funds Service, through an enterprise structure. This agreement was memorialized in the FRFS Enterprise Principles, which set out the responsibility and accountability of FRFS and the CPE in the development, management, and operations of the Federal Reserve financial services, including the Fedwire Funds Service, and the PC with respect to FRFS oversight and strategy. Collectively, the FRFS Enterprise Principles, which were approved by the Reserve Bank boards of directors, establish the FRFS governance framework, which is further described below, and identify the areas delegated to FRFS to manage.

Two COP committees, the PC and the Information Technology and Operations Committee (ITOC), play important roles in governing Reserve Bank financial services. ITOC sets the strategic direction and policy for Reserve Bank information technology (IT), approves Reserve Bank national IT standards and security policies, and oversees the provision of national IT services to Reserve Banks. The COP, through the PC, takes on responsibilities equivalent to a board of directors for FRFS with respect to setting strategy and oversight. The CPE and FRFS senior management develop strategic priorities and the risk management framework for the Service and then seek approval through the PC.

Reserve Bank Technology Services

In support of FRFS strategic objectives, the CPE and FRFS execute a comprehensive and integrated technology and channel management strategy to deliver Reserve Bank financial services. FRFS relies on the Federal Reserve Bank of Richmond for certain consolidated IT services known as “National IT.” Among other responsibilities, National IT is responsible for running the technology infrastructure used by the Fedwire Funds Service. FRFS is responsible for defining the business requirements and specifications of the wholesale services and managing/overseeing the development of software to run wholesale services, including the Fedwire Funds Service. FRFS and National IT are responsible for providing customer access solutions and hosting environments for wholesale services respectively.

The Federal Reserve Bank of Richmond operates under the supervision and control of a board of directors, is subject to general supervision of the Board of Governors, has agreements in place with all of the Reserve Banks to provide IT services, and is responsive to Reserve Bank conferences and committees such as the COP, the PC, ITOC, and the Reserve Banks’ Conference of First Vice Presidents (CFVP).

As with other Reserve Bank functions responsible for critical infrastructure, the Federal Reserve Bank of Richmond is accountable to the other Reserve Banks for the services that it has agreed to provide, including those related to financial services. National IT’s performance is assessed against predefined measures and annual performance evaluations by ITOC. Senior management of National IT meet with FRFS senior management and the PC as necessary to address priorities and objectives with respect to services provided by National IT to FRFS.

⁵⁰ To the extent that the COP is considering matters that concern the broad strategy of a Reserve Bank, as well as those of material interest to a Reserve Bank, that Reserve Bank’s president must act in a manner that is consistent with the approvals and broad strategies adopted by the board of directors of their Reserve Bank.

Board of Governors

Under the Federal Reserve Act, the Board of Governors has supervisory authority over the Reserve Banks, including the Reserve Banks' provision of payment and settlement services. With respect to the wholesale services, including the Fedwire Funds Service, the Board of Governors has publicly recognized the critical role these services play in the financial system and has implemented a supervisory framework for the wholesale services that is comparable to, or that exceeds, the requirements placed on similar private-sector payment and settlement arrangements.

To carry out its authority, the Board of Governors has established two committees to provide direction on payment and settlement system issues. The Committee on Federal Reserve Bank Affairs is charged with the Board's general supervision of Reserve Bank operations, budgets, and strategic plans. As a result, the Committee on Federal Reserve Bank Affairs oversees the Reserve Banks' provision and pricing of financial services. The Payments System Policy Advisory Committee advises the Board of Governors on policy and strategic matters involving domestic and international payment and settlement issues, including issues related to risk management.

In addition to these two committees, Board of Governors' staff, through the division of Reserve Bank Operations and Payment Systems, provides support to the Board of Governors in exercising its general supervision of Reserve Bank financial services through examinations, analyzing payment and settlement issues, and developing payment and settlement policies and regulations. The Board of Governors has delegated authority to the division's director to approve certain types of proposals and expenditures. Other proposals and expenditures may be approved by the Reserve Banks under their own authority.⁵¹

2.3 The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.

COP and PC

The COP performs roles and responsibilities equivalent to a standalone FMI's board of directors with respect to oversight of FRFS management and setting FRFS strategy. The COP has chosen to delegate many of these responsibilities to its committee, the PC, as outlined by the COP in the PC's charter. The PC's oversight responsibilities for FRFS, as set forth in its governing charter, include overseeing risk management and compliance practices, overseeing and assessing operational performance of FRFS and the CPE, and overseeing adherence by the Service to the PFMI and to financial reporting controls. With regards to FRFS strategy, PC is responsible for setting the overall strategic direction for FRFS and all Reserve Bank financial services, including engaging with FRFS management on long-range operational planning; business priorities; and strategic initiatives; and informing Federal Reserve System payments policy.

⁵¹ See Board of Governors of the Federal Reserve System, Supervision and Oversight of Financial Market Infrastructures, Reserve Bank Systems, available at http://www.federalreserve.gov/payment-systems/over_rbsystems.htm.

The PC is composed of Reserve Bank presidents and Reserve Bank first vice presidents. In addition, there are multiple liaisons advising the PC, including the CPE, a senior management representative of the Board of Governors, the Federal Reserve's chief information officer, and FRFS coordinating general auditor (CGA). As necessary, the PC further consults with other established committees to support the work of the PC or to further FRFS strategic priorities.

All Reserve Bank officers and employees, including members of the COP and the PC, are subject to a code of conduct, and they are subject to the same federal conflict-of-interest statute that applies to Reserve Bank directors (and federal government employees).⁵² Reserve Bank officers and employees are generally prohibited from owning or controlling investments in depository institutions, affiliates of depository institutions, thrift holding companies whose thrifts constitute a significant portion of their overall assets, and investment funds that have a stated policy of concentrating their investments in the financial services sector. To avoid the appearance of conflicts of interest, Reserve Bank officers and employees are also generally prohibited from accepting gifts from a supervised institution or anyone that does business or seeks to do business with the Reserve Banks.

The ethics officer and senior management of each Reserve Bank are responsible for ensuring that their officers and employees comply with that Reserve Bank's code of conduct and the ethics laws. This is primarily done through annual training and financial disclosures, as well as through ethics hotlines.

The PC reviews its charter annually and directs an annual assessment of the PC's performance against its scope of responsibilities.

Reserve Bank Boards of Directors

The Federal Reserve Act states that each Reserve Bank's board of directors generally is responsible for supervision and control of that Reserve Bank.⁵³ The board of directors is required to perform the duties usually appertaining to the office of directors of banking organizations, including exercising (directly or by officers or agents) "all powers specifically granted ... by [the Federal Reserve Act] and such incidental powers as shall be necessary to carry on the business of banking within the limitations prescribed by [the Federal Reserve Act]."⁵⁴

While the COP, through its PC, performs roles similar to a traditional board of directors in overseeing management, the Reserve Bank boards retain ultimate accountability for the activities of the Reserve Banks in providing financial services. To facilitate the directors in fulfilling these responsibilities, the CPE and other FRFS senior management periodically meet with each Reserve Bank's board of directors. All boards of directors receive periodic reporting on FRFS activities, including information on Reserve Bank contributions, environmental drivers, strategic direction, and performance outcomes.

To enhance and help ensure independent oversight of audit, the directors on the audit committee of the Reserve Bank whose general auditor serves as the CGA have additional

⁵² The federal conflict of interest statute is codified at 18 USC § 208.

⁵³ Federal Reserve Act § 4(6) (12 USC § 301).

⁵⁴ Federal Reserve Act § 4(4) (12 USC § 341).

responsibilities. This audit committee directly oversees the CGA and is responsible for assessing, on an aggregate basis, the adequacy and effectiveness of the FRFS audit program. This includes understanding the full FRFS risk profile, reviewing the annual audit plan and the adequacy of available audit resources, considering the significance of audit results on a thematic basis, evaluating the status of open auditing findings, and communicating its assessment to the audit committees of other Reserve Bank boards of directors and the PC. The CGA also is responsible for coordinating with Reserve Bank general auditors to facilitate communications with the board audit committees of the other Reserve Banks on FRFS audit, risk, and compliance matters. Accordingly, the directors of other Reserve Banks, through their audit committees, are provided independent and objective assurance of the FRFS's risk management frameworks, internal controls, and governance processes.

As discussed in more detail in section 2.4, the Federal Reserve Act dictates who appoints different classes of Reserve Bank directors and whose interests those directors represent. While the requirements in the Federal Reserve Act could result in potential conflicts of interest, especially with respect to class A directors (i.e., directors who represent member banks), several factors minimize that risk. First, all Reserve Bank directors are subject to policies adopted by the Board of Governors that address director conduct and serve to mitigate conflicts of interest.⁵⁵ In addition, Reserve Bank directors are subject to the same criminal conflict-of-interest statute that applies to federal government employees, as well as to officers and employees of the Reserve Banks. That statute prohibits a Reserve Bank director from participating personally and substantially in any Reserve Bank matter that, to the director's knowledge, would have a direct and predictable effect on the director's financial interest, broadly defined.⁵⁶ At the time they join a Reserve Bank board, directors are required to undergo ethics training and to certify that they comply with Reserve Bank restrictions on interests in financial institutions. Thereafter, they must recertify their compliance every year. If an actual or potential director conflict arises, directors are obligated to recuse themselves from the matter.

2.4 The board should contain suitable members with the appropriate skills and incentives to fulfil its multiple roles. This typically requires the inclusion of nonexecutive board members.

COP and PC

The PC is composed of Reserve Bank presidents and Reserve Bank first vice presidents. The COP chair is responsible for appointing PC members and selecting a chair under advisement of the Governance and Risk Committee (GRC). The CFVP chair may offer recommendations for the first vice president positions. Committee membership is reviewed annually. To the extent practicable, PC members will serve four-year terms and the chair will serve for no more than four consecutive years. Typically, a president and first vice president from the same Reserve Bank will not concurrently serve as PC members. The chair of the PC assigns members to serve in roles focused on matters affecting FRFS. PC members may augment the PC by appointing liaisons within the System with specialized expertise, such as the System chief information officer. Liaisons are not members of the PC and do not have voting privileges, but they may attend and participate in PC meetings and discussions.

⁵⁵ These policies are available at <http://www.federalreserve.gov/aboutthefed/directors/policy-governing-directors.htm>.

⁵⁶ 18 USC § 208. Participation in a particular matter may include making a decision or recommendation, providing advice, or taking part in an investigation.

As a central bank president or first vice president, each PC member is a leader and leading expert in their field, and PC members from separate Reserve Banks provide diversity of perspective to the PC by drawing from their experiences serving as leaders within distinct Reserve Bank districts, each with varied functions, focuses, and footprints. This varied expertise is further enhanced by the inclusion of both presidents and first vice presidents with their respective concentrations on policy and operations. Since PC members are not part of the FRFS management structure, they are well positioned to offer an independent view on the effectiveness of FRFS management.

Reserve Bank Boards of Directors

All Reserve Bank directors are nonexecutive directors. Both the process for selecting directors and the criteria for serving as directors are mandated by section 4 of the Federal Reserve Act. Each Reserve Bank board of directors has nine members, who are divided into three equal classes designated A, B, and C. Class A and class B directors are elected by their respective Reserve Bank's shareholders.⁵⁷ Class C directors are appointed by the Board of Governors. Each year, one class C director is designated by the Board of Governors to be chair of their Reserve Bank's board of directors and a second class C director is designated deputy chair.

Under the Federal Reserve Act, class A directors represent the member banks in each reserve district. Typically, class A directors are officers or directors of member banks or their holding companies. Class B and class C directors are required by the Federal Reserve Act to represent the public "with due but not exclusive consideration to the interests of agriculture, commerce, industry, services, labor and consumers."⁵⁸ The intent of Congress in devising such a system was to ensure that a diversity of viewpoints and backgrounds is represented on each Reserve Bank's board of directors.

2.5 The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.

Responsibilities of FRFS Management

As noted, the CPE is responsible for all FRFS activities as outlined in the FRFS Enterprise Principles. To support the execution of these activities, the CPE names members of the FRFS Leadership Team (FLT), which report directly to the CPE and serve as the chief officers of their respective functions, including payments operations; product and relationship management; information technology; people and culture; diversity, equity, and inclusion; centralized support to Federal Reserve cash services; enterprise services; and the office of the CPE, inclusive of governance responsibilities. The heads of certain FRFS functions, including the FRFS chief counsel and CRO, along with the FRFS CGA (discussed in the following section), are charged with providing an independent assessment of risk across all FRFS activities, and they are each empowered to develop frameworks for addressing these risks and escalating risk concerns to

⁵⁷ Under the Federal Reserve Act, Reserve Bank shareholders are member banks. All national banks and those state banks that have successfully applied to become members must subscribe to stock in the Reserve Bank in their Federal Reserve district.

⁵⁸ Federal Reserve Act § 4(11) (codified at 12 USC § 302).

the PC or relevant Reserve Bank boards of directors. FRFS senior management is responsible to provide reports and briefings on FRFS strategic priorities and risk management to the PC, including those pertaining to the Fedwire Funds Service.

Expertise and Performance

FRFS requires that each of its executive officers, including members of the FLT, have significant core expertise and experience and that each exhibit leadership abilities in such areas as strategic thinking, inclusiveness, and staff and team development. Members of the FLT develop annual performance objectives in consultation with the CPE. For the CPE, annual performance goals are established by the chair of the PC. FRFS officers, including all FRFS executive officers, are subject to annual performance evaluations.

In addition to the internal appraisal process, the PC annually conducts an evaluation of FRFS' performance under the FRFS Enterprise Principles' operating model in place to deliver Reserve Bank financial services, including the Fedwire Funds Service; this evaluation includes an assessment of the CPE. The PC coordinates this effort, which includes a self-assessment by FRFS of its performance against the previously agreed-upon business objectives and input by each of the Reserve Banks on FRFS' performance. The PC will inform the COP the results of this annual assessment.

Integrity

As reflected in the Reserve Banks' codes of conduct, the Reserve Banks believe each is indispensable to the proper functioning of, and the maintenance of public confidence in, the Reserve Banks and the Federal Reserve System overall that every employee and officer perform their duties with honesty, integrity, and impartiality and without improper preferential treatment of any person.⁵⁹ Each employee and officer has a responsibility to their employing Reserve Bank and the rest of the Federal Reserve System to avoid conduct that places private gain above their duties to their Reserve Bank, that gives rise to an actual or apparent conflict of interest, or that might result in a question being raised regarding the independence of the employee's or officer's judgment or ability to perform the duties of their position satisfactorily. Moreover, each employee is expected to conduct their financial affairs with integrity and honesty.

Reserve Bank employees and officers who are responsible for Reserve Bank financial services, including those supporting the delivery of the Fedwire Funds Service, are also subject to an information barrier imposed by the Board of Governors that restricts their access to information of the Reserve Banks' supervisory, monetary policy, and lending functions. This policy is designed to help avoid a conflict or potential conflict that might arise between the Reserve Banks' role as financial service providers and their roles as supervisors and lenders.⁶⁰

2.6 The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and

⁵⁹ See section 2.3 for a further discussion of ethical rules applicable to all Reserve Bank employees and officers, including FRFS employees and officers (i.e., the federal conflict of interest statute and investment restrictions).

⁶⁰ See Standards Related to Priced-Service Activities of the Federal Reserve Banks, *supra* note 23.

emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.

Pursuant to the FRFS Enterprise Principles, under which FRFS manages the Fedwire Funds Service for all 12 Reserve Banks, FRFS is required to identify and manage risks associated with the provision of wholesale services. As reflected in the FRFS risk management framework, risk tolerance policy, and risk tolerance statement, FRFS employs a three-lines risk management model that emphasizes interaction and communication between the first line (business line) and second line (e.g., FRFS risk management), with independent oversight by the third line (Reserve Banks internal audit functions). FRFS relies on these lines to help it manage risk for the wholesale services, including the Fedwire Funds Service. For more detail on the three-lines risk management model, see Principle 3, *Framework for the comprehensive management of risks*.

The FRFS risk management framework includes required assessments by groups across FRFS, an internal control framework designed to map controls to key risks, a reporting framework designed to capture risk events, and policies to address certain risks that are applicable to all business lines. The FRFS risk-management framework and risk tolerance policy assign responsibilities and accountability for risk decisions. FRFS also has established a risk tolerance statement with respect to its management of risks specific to the wholesale services, including the risk management of the Fedwire Funds Service.

Risk Management and Audit Responsibilities

The chief risk officer, as well as leaders of the other control functions, may report risk matters directly to the CPE or PC, as needed, under the FRFS governance framework, including the PC charter. The FRFS chief risk officer leads the second line FRFS risk management function to establish requirements for FRFS risk tolerances and assessment of risks associated with the Fedwire Funds Services. To this end, the FRFS chief risk officer regularly informs the PC of their independent assessment of the FRFS risk posture, notable changes to material risks, and, as applicable, risk events and any related FRFS response.

The Federal Reserve System Conference of General Auditors (COGA), which is comprised of the general auditor from each Reserve Bank, is responsible for organizing audit attention to FRFS. The COGA chair, in consultation with the PC chair and the director of Board of Governors division of Reserve Bank Operations and Payment Systems (RBOPS), selects a Reserve Bank general auditor with payments-related subject matter expertise, to serve as CGA for FRFS. The CGA works with Reserve Bank general auditors to establish a comprehensive risk-based FRFS audit plan; coordinate audit reviews spanning multiple Reserve Banks; assess audit results on a thematic basis; deliver independent, objective insights and perspectives to the PC, Reserve Bank board of director audit committees, and business management; and ensure that there are no material gaps in audit coverage across the System.

The CGA, or their designee, serves as the primary audit liaison to FRFS and the PC. FRFS management is responsible for providing updates on operational matters and remediating audit issues in a timely manner. The PC is responsible for ensuring that FRFS is operating in a well-controlled, efficient, and effective manner. As such, the CGA presents the FRFS audit plan to the PC, and the PC remains apprised of audit results and open audit issues, including reports from other oversight bodies, and, as applicable, concurs with management follow-up actions. The CGA ensures that the PC and CPE are kept apprised of the annual FRFS audit plan,

progress towards audit plan completion, significant audit findings, and the status of open audit issues.

Incident Management

As noted in section 17.6, there are documented communication and incident-management protocols in place at the Federal Reserve System level to address impacts, guide decision-making, and assign responsibilities across multiple Reserve Banks or business lines when the Reserve Banks are faced with a severe information security incident or other disruptive event affecting the Fedwire Funds Service. The protocols incorporate incident and problem management processes established by the Reserve Banks to (1) manage the rapid deployment of skilled personnel and resources to restore normal operations as quickly as possible and (2) facilitate the review of critical incidents, determine root causes, and assist in the prevention of recurring problems.

2.7 The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.

The COP, through the PC, is responsible for ensuring that the design and rules of the Fedwire Funds Service and the overall FRFS strategy and major decisions affecting the Service appropriately reflect the legitimate interests of the Service's direct and indirect participants and other relevant stakeholders.

Under section 11A of the Federal Reserve Act, the Board of Governors was charged with establishing pricing principles and fee schedules based on those principles for Reserve Bank-provided financial services. After issuing those principles,⁶¹ the Board of Governors further elaborated on them in guidelines, two of which require the Federal Reserve to seek input from and provide information to external stakeholders. Specifically, the two guidelines read as follows:

[(1)] In the provision of financial services, the [Reserve Banks and the Board of Governors] will ascertain the needs of depository institutions and the public so that the Federal Reserve can enhance its ability to offer useful, cost-effective, and complete packages of financial services to its customers, while recognizing the statutory requirement that revenues must cover costs.

[(2)] The Reserve Banks will undertake efforts to provide depository institutions with full information about the nature and scope of financial services offered, including the prices, benefits, and operating requirements of those services. The character of these efforts should be consistent with the System's responsibility to serve the public interest.⁶²

The Board of Governors' role in establishing pricing principles and approving fees for Reserve Bank financial services and in carrying out certain other responsibilities is a unique aspect of the

⁶¹ See Board of Governors of the Federal Reserve System, Principles for Pricing of Federal Reserve Bank Services, *Federal Reserve Regulatory Service* 9–1566 to –1568 (1980), available at http://www.federalreserve.gov/paymentsystems/pfs_principles.htm.

⁶² Federal Reserve System Guidelines for the Provision of Financial Services, *supra* note 47, at 9–1573.

structure of the Federal Reserve System because the Board of Governors takes actions that might be undertaken by a board of directors of a standalone private-sector FMI. For example, while the Reserve Banks publish all operating circulars and fee schedules, as well as any changes to them, on the Reserve Banks' publicly accessible financial services website, by policy the Board of Governors determines whether to seek public comment on significant changes to Reserve Bank financial services and approves fees for Reserve Bank financial services, including the Fedwire Funds Service, with a detailed disclosure explaining how those fees were determined.

New Services, Service Modifications, and Rule Changes

Requests for Public Comment on Reserve Bank Financial Services Changes

The Board of Governors has adopted a policy of seeking public comment when changes in Reserve Bank fees and service arrangements are proposed that would have significant longer-run effects on the nation's payments system.⁶³ One of the committees of the Board of Governors, the Committee on Federal Reserve Bank Affairs mentioned in section 2.2, has issued guidelines that Board of Governors staff and the committee could use "as input to their assessment of whether a proposal related to Federal Reserve priced services should be subject to public comment before adoption."⁶⁴ These guidelines, which are not to be "rigidly applied, but rather used at the Board's discretion," indicate that public comment should be requested in the following circumstances: (i) the Board of Governors proposes changes to its pricing principles; (ii) a Reserve Bank plans to enter a new priced service line or significantly expand or modify an existing service line; (iii) all Reserve Banks plan to withdraw from a current service line; (iv) Reserve Banks plan to recover less than the short-run average variable cost for a service line over an extended period; (v) a Reserve Bank's planned action in connection with a service is likely to have a direct and material adverse effect on the ability of other service providers to compete effectively in providing similar services for legal reasons (i.e., due to differing legal powers or constraints) or because the Reserve Banks have a dominant market position deriving from such legal differences; (vi) the Board of Governors proposes a significant modification to the methodology for calculating imputed costs or revenue for the priced services; or (vii) the contemplated action would, or is meant to, result in a significant long-term structural change in the nation's payments or settlement systems.⁶⁵

Material Changes to Service and Service Proposals

Board of Governors' policy also dictates that the Reserve Banks seek the Board of Governors' review of any material changes to the risk profile of the Fedwire Funds Service or of any other proposals relating to the Service that the Board deems to be "nonroutine." This policy is intended to ensure that the Board of Governors holds the Reserve Banks to procedural requirements that are the same as, or higher than, the requirements for financial market utilities designated as systemically important by the Financial Stability Oversight Council and supervised by the Board of Governors. The Board of Governors imposes a similar requirement on such financial market utilities through Regulation HH.

⁶³ See Principles for Pricing of Federal Reserve Bank Services, *supra* note 61, at 9–1568 (principle 7).

⁶⁴ See Committee on Federal Reserve Bank Affairs, Board of Governors of the Federal Reserve System, Guidelines for Requesting Public Comment on a Federal Reserve Priced Service, *Federal Reserve Regulatory Service* 9–1574 (1995).

⁶⁵ See *id.*

The Board of Governors has delegated the authority to approve routine, nonmaterial service proposals to the PC, which in turn has been delegated to the CPE. The PC is informed of all product or service proposals under this delegated authority. Given this delegation and the Reserve Banks' agreement (endorsed by the Reserve Banks' boards of directors) to work through the COP and its committees, FRFS works with the PC and the COP to advance strategies related to the Fedwire Funds Service. From time to time, FRFS presents proposals relating to the Service to the Payments System Policy Advisory Committee.

Changes to Rules of the Board of Governors and to Operating Circulars of the Reserve Banks

As a federal agency, the Board of Governors is subject to the public notice and comment provisions of the Administrative Procedure Act when it proposes new, or amends existing, rules or regulations, including Regulation J, which governs the Fedwire Funds Service. Generally, the Administrative Procedure Act requires that each federal agency provide notice to the public of a proposed rulemaking and an opportunity for the public to comment on the proposed rulemaking before it becomes effective. The notice of a proposed rulemaking must be published in the Federal Register. In addition, the Board of Governors may seek public comment on certain policy issues that are not necessarily rules under the Administrative Procedure Act.⁶⁶

The process for changing Reserve Bank operating circulars is described in section 1.2.

Informal Reserve Bank Efforts

The Reserve Banks, through FRFS, regularly seek to improve the efficiency and effectiveness of the Fedwire Funds Service. FRFS uses external user groups to obtain information on best practices, participant business needs, demand for new features, and cost reduction. FRFS also obtains customer input through regular interactions with individual customers, as well as through the administration of periodic customer satisfaction surveys.

For more detail on how the Reserve Banks solicit feedback on the Service, see Principle 21, *Efficiency and effectiveness*.

Customer Advisory Group

As described in more detail in section 21.1, an advisory group chaired by the FRFS officer in charge of product strategy for the Fedwire Funds Service provides a mechanism for ongoing communication and collaboration between the FRFS and representatives of key Fedwire Funds Service participants and service providers. FRFS uses this advisory group to improve its understanding of Fedwire Funds Service customer business needs. FRFS works closely with the advisory group to obtain feedback on potential changes and enhancements to the Fedwire Funds Service, to identify and consider the likely implications of changes to the Service, to suggest and structure additional analysis or market research needed to evaluate potential changes to the Service, and to participate in the review of high-level specifications for changes and enhancements selected for implementation.

⁶⁶ As an example, the Board of Governors seeks public comment on its PSR policy.

Other

The Reserve Banks periodically seek input on specific issues through interviews with customers, customer surveys, focus groups, or meetings with industry trade groups across a range of issues and financial services, including the Fedwire Funds Service. FRFS business and technical customer support units provide support and problem resolution related to specific service issues, such as answering questions about how to use features of the Service, solving problems, reconciling transactions, and establishing and testing electronic access connections. FRFS uses information from these areas to improve the Fedwire Funds Service.

Principle 3: Framework for the comprehensive management of risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

3.1 An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.

The Fedwire Funds Service faces a range of risks as an FMI. These risks include operational, strategic, compliance, financial statement reporting, reputational, and legal risks.⁶⁷ FRFS has an FRFS risk-management framework, FRFS risk tolerance policy, wholesale risk tolerance statement, and associated policies, procedures, and systems, as the basis for its comprehensive management of these risks with respect to the Service.

As reflected in the FRFS risk-management framework, FRFS employs a three-lines risk management model in its risk oversight of the Fedwire Funds Service that emphasizes interaction and communication between the first line (business line) and second line (FRFS risk management), with independent oversight by the third line (internal audit).

- The first line consists of the management and staff responsible for delivering the Service and managing day-to-day operations for the Fedwire Funds Service. The FRFS first line is responsible for identifying, assessing, mitigating, monitoring, and reporting risks related to the Service, and for managing risk within tolerances for wholesale services set forth in the wholesale services risk tolerance statement.
- The second line includes the FRFS risk management function and other areas within FRFS, such as the Cyber Assurance Department within Information Security and FRFS Legal. These functions provide independent risk assessment, independent risk oversight, development and maintenance of risk frameworks and risk-related policies to the FRFS first line functions, and support of first line implementation of risk management frameworks. These functions periodically update the FRFS risk committee, FRFS leadership team and the PC.
- The third line is internal audit, as described in section 2.6. The FRFS CGA is responsible for working with Reserve Bank general auditors to provide an independent assessment of the effectiveness of the control environment for identifying and managing risk in FRFS. Internal audit conducts annual audits of the Fedwire Funds Service using a risk-based approach. It also monitors FRFS’ strategically important projects, current business operations, and new initiatives, including with respect to the Fedwire Funds Service. The internal audit group also reports the results of their work, including recommendations to the other lines of risk management, directly to the PC and the Reserve Bank Audit Committee of the FRFS CGA.

⁶⁷ Credit risk is managed by each Reserve Bank in its capacity as an Administrative Reserve Bank (ARB). An Administrative Reserve Bank is the Reserve Bank in whose Federal Reserve district the Fedwire Funds Service participant is located. It generally oversees the administration of Federal Reserve credit, reserves, and risk management policies for a financial institution’s operations nationwide. For additional information on Administrative Reserve Bank responsibilities, see section 3.2 and Principle 4, *Credit risk*.

The FRFS risk-management framework establishes requirements to routinely review the risk tolerance policy, and wholesale risk tolerance statement. The FRFS risk-management framework is reviewed by the FRFS leadership team and approved by the FRFS chief risk officer, CPE, and the PC. The FRFS risk tolerance policy establishes requirements for the risk tolerance statement for wholesale services to be updated annually and approved by the FRFS chief risk officer, CPE, and the PC. The wholesale services risk tolerance statement includes a review process to regularly evaluate business-specific risks against acceptable risk tolerances. The FRFS reports and escalates risks to the FRFS leadership team and the PC and incorporates remediation plans into the FRFS strategic planning process.

3.2 An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.

U.S. law, the Reserve Banks, and the policies of the Board of Governors provide incentives to Fedwire Funds Service participants to manage a variety of risks they pose to the Reserve Banks in operating the Service, such as credit risk and fraud risk.

The Board of Governors' PSR policy provides a mix of incentives for Reserve Bank customers to limit the credit risk they pose to each Administrative Reserve Bank (ARB),⁶⁸ including in connection with their use of the Fedwire Funds Service. For instance, under the PSR policy, institutions with regular access to the discount window receive a zero fee for the collateralized portion of their overdrafts and are assessed a fee of fifty basis points (annual rate) for the uncollateralized portion of their overdrafts. This pricing difference provides an incentive for even healthy institutions to collateralize intraday overdrafts and limits an ARB's risk of loss from credit exposure to that institution. An ARB might also apply risk controls or take other remedial actions to manage credit risk that will affect how the customer uses Reserve Bank services, particularly if the customer is a higher-risk institution. For more detail on how the Reserve Banks manage their credit risk and on the information the Reserve Banks provide customers to manage their accounts, see Principle 4, *Credit risk*.

The Reserve Banks offer each Fedwire Funds Service participant a variety of security procedures and enforce certain security-related rules to minimize risks to the Service. These risks include cybersecurity risk and the risk of fraud (i.e., the risk that a Reserve Bank would execute a payment order that had not been authorized by its sender). A participant chooses the particular security procedure that will be used to verify the authenticity of its payment orders in a written agreement with the Reserve Bank that holds its master account. The Reserve Banks themselves are incented to offer commercially reasonable security procedures. That is because the law shifts the risk of loss away from banks that receive payment orders (like the Reserve Banks in the case of the Fedwire Funds Service) so long as they verify the payment orders they receive in compliance with a security procedure that is commercially reasonable.⁶⁹ The risk of

⁶⁸ See footnote 67 for the definition of ARB.

⁶⁹ Specifically, a receiving bank is entitled to regard a payment order as authorized, even if it was not, if the following conditions are met. First, the receiving bank and the sender of the payment order must have agreed that the authenticity of payment orders issued to the bank would be verified in accordance with a security procedure. Second, the agreed-upon security procedure must be commercially reasonable. Third, the receiving bank must prove that, in accepting the payment order, it did so in good faith and in compliance with the agreed-upon security procedure and any written agreement or instruction from the customer restricting the acceptance of payment orders. The liability for an unauthorized payment order is thereby shifted to the sender of the order. See UCC § 4A-202 (applicable to the Reserve Banks in the context of the Fedwire Funds Service by virtue of Regulation J).

loss resulting from unauthorized payment orders therefore generally falls on Service participants. Consequently, they are motivated to take measures to mitigate the risk that their hardware, software, or other systems or personnel might be compromised. A participant may be able to shift the liability back to its Reserve Bank, but only if the participant proves that the unauthorized order was caused by a true interloper.⁷⁰

Operating Circular 5, which governs electronic access to the Reserve Banks, also incepts Fedwire Funds Service participants to manage and contain the risks they pose to the Service directly and through their customers by relieving the Reserve Banks of liability if participants fail to adopt or implement prescribed information security measures.⁷¹

The FedPayments Manager—Funds application offers participants accessing the Fedwire Funds Service through the FedLine Advantage solution a variety of processing options to help them manage how they create, update, and verify messages they send to the Fedwire Funds Service. Participants determine the appropriate settings based on their own business and risk tolerance. The Reserve Banks have also implemented a feature that allows participants to extend certain options in FedPayments Manager—Funds to payment orders they submit via the FedLine Direct solution and the offline service.

The Reserve Banks have a security and resiliency assurance program to reduce the risk of fraudulent payments or other messages being sent through Reserve Bank financial services. Institutions and their service providers that use the Reserve Banks' FedLine[®] solutions to access any Reserve Bank financial service, including the Fedwire Funds Service, must conduct an annual self-assessment of compliance with the Reserve Banks' security requirements. FedLine users must submit a written attestation to the Reserve Banks upon completion of their assessments. While the self-assessment may be calibrated to the risks institutions face, the Reserve Banks may require the assessment to be conducted or reviewed by an independent third party, an internal audit function, or an internal compliance function. Institutions are required to remediate any areas of noncompliance with Reserve Bank security requirements.

For more detail on the measures the Reserve Banks require Service participants to take with respect to cybersecurity and how those measures help address the risk posed not only by those participants but also by their customers, see Principle 19, *Tiered participation arrangements*.

3.3 An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.

FRFS regularly evaluates the material risks the Service bears from and poses to other entities and has procedures for minimizing risks that could impact the availability of the Service in such scenarios. Among these risks, the Fedwire Funds Service faces operational risk from its

⁷⁰ The burden of proof is high: the participant must prove that the unauthorized order was not caused, directly or indirectly, by anyone it had entrusted with duties to act for it with respect to payment orders or the security procedure (such as an employee or a service provider); by anyone who obtained access to the participant's facilities for transmitting payment orders; or by anyone who obtained information, such as access devices or computer software, that facilitated breach of the security procedure, even if the participant was not at fault. See UCC § 4A-203(b).

⁷¹ This limitation is subject to applicable law. See Federal Reserve Banks, Operating Circular 5, *Electronic Access*, app. A §§ 4.1, 4.2, available at [Operating Circular No. 5 \(frbervices.org\)](https://www.frb.org/about-us/operating-circulars/operating-circular-no-5)

Reserve Banks and third-party service providers, including utilities such as electricity and telecommunications network suppliers. As a result, FRFS closely monitors service provision and actively manages these relationships. The Reserve Banks also recognize the systemic importance of the Fedwire Funds Service and the material risk it poses to other entities, including other FMIs. As a result, the Reserve Banks expend significant effort to ensure that the availability of the Service remains high and that its resiliency program remains robust and is tested regularly.

3.4 An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.

As the Board of Governors noted when it revised the PSR policy to incorporate the risk management and transparency standards in the PFMI, the Fedwire Funds Service does not “face the risk that a business shock would cause the service to wind down in a disorderly manner and disrupt the stability of the financial system.”⁷² Accordingly, the Board of Governors does not require the Service to develop recovery or orderly wind-down plans under this principle.⁷³ This is consistent with *Application of the Principles for Financial Market Infrastructures to Central Bank FMIs* issued in August 2015 regarding central bank-operated FMIs, which noted that a central bank’s ability to “ensure continuity of operations of the FMI as necessary in extreme financial circumstances means that the requirements to prepare recovery and orderly wind-down plans do not apply.”⁷⁴ The August 2015 guidance also states that requirements to support resolution planning or intervention by a resolution authority in the operation or ownership of FMIs do not apply in the case of central bank–operated FMIs, like the Fedwire Funds Service, because intervention by a resolution authority is not relevant for such FMIs.⁷⁵

⁷² Policy on Payment System Risk, 79 Fed. Reg. at 67329.

⁷³ *Id.*

⁷⁴ See *Application of the Principles for Financial Market Infrastructures to Central Bank FMIs*, *supra* note 6, at 1.

⁷⁵ See *id.*

Principle 4: Credit risk

An FMI should effectively measure, monitor, and manage its credit exposure to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two largest participants and their affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions. All other CCPs should maintain, at a minimum, total financial resources sufficient to cover the default of the one participant and its affiliates that would potentially cause the largest aggregate credit exposures to the CCP in extreme but plausible market conditions.

As a central bank operated RTGS system, neither the Fedwire Funds Service itself nor its non-defaulting participants are affected by participant defaults. As an ARB, each Reserve Bank manages credit risk posed by its customers across all Reserve Bank financial services, not just the Fedwire Funds Service. By policy of the Board of Governors, credit risk management is handled by Reserve Bank employees that are separate from the employees that provide Reserve Bank financial services, such as the Fedwire Funds Service.⁷⁶ The discussion below, therefore, considers how the Reserve Banks address credit exposure to Fedwire Funds Service participants through their credit risk management functions (rather than the Fedwire Funds Service).

4.1 An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.

Part II of the PSR policy governs the provision of intraday credit (or daylight overdrafts) in master accounts at the Reserve Banks and serves as the framework by which the Reserve Banks manage their credit exposures to account holders. The PSR policy recognizes that the Reserve Banks have an important role in providing intraday credit to foster the smooth functioning of the payment system. At the same time, the policy seeks to manage the risks assumed by the Reserve Banks in providing that intraday credit. In considering an institution's request for daylight overdraft capacity, Reserve Banks evaluate the institution's financial, market, and supervisory information. Under the policy, the Reserve Banks may supply temporary, intraday credit to depository institutions. The Reserve Banks manage their exposures through several methods, including by motivating institutions to collateralize daylight overdrafts voluntarily (by not charging a fee for collateralized daylight overdrafts), by setting limits on daylight overdrafts in institutions' master accounts, and by requiring collateral in certain situations.

To ensure compliance with the policy, the Reserve Banks monitor daylight credit usage for each account holder generally on an *ex post* basis given different posting rules across Reserve Bank services. However, specifically for transfers through the Fedwire Funds Service, the Reserve Banks apply real-time monitoring controls to the balances of nearly all institutions as a standard

⁷⁶ See Standards Related to Priced-Service Activities of the Federal Reserve Banks, *supra* note 23, at 9–1570.

risk mitigant such that if the account holder tries to send a Fedwire funds transfer without having sufficient funds or overdraft capacity in its master account, the transaction would reject, thereby averting an overdraft or limiting the account-holding Reserve Bank's overdraft exposure to a predefined level.⁷⁷ In addition, for certain other Reserve Bank services, the Reserve Banks may choose to apply real-time monitoring controls under other circumstances, for instance, if a Reserve Bank believes an institution poses excessive risk (e.g., if an account holder's financial condition is deteriorating). Further, Reserve Banks may take other prudential actions to manage credit risk, including requiring institutions to post collateral.

4.2 An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.

Reserve Banks initially assess credit risk of each account holder through their account-setup process. Institutions' eligibility for master accounts and financial services is governed by federal law and Operating Circular 1. At the time an institution applies for a master account or financial services, the account-holding Reserve Bank reviews the applicant's eligibility, initiates or updates its assessment of counterparty credit risk, assigns a net debit cap, and may apply risk controls to the account, if it deems it necessary.⁷⁸ If the institution is in weak financial condition, the Reserve Bank will impose a zero cap, though access to collateralized intraday capacity may be granted. Once a master account is opened, the Reserve Bank reviews the credit risk the account holder poses to it at least quarterly to ensure appropriate risk controls are applied to the account. If necessary, the Reserve Bank will implement or adjust risk controls on the account at the time of those reviews.

Reserve Banks routinely measure and monitor credit exposures posed by their account holders. For those account holders that are subject to real-time monitoring controls, such as those deemed to pose greater risk, Reserve Banks monitor and limit credit exposure throughout the business day. Credit exposure to account holders that are not subject to real-time controls is measured on a next-day basis. With few exceptions, Reserve Banks consider all cap breaches to be violations of the PSR policy and counsel account holders as outlined by the PSR policy.

Reserve Banks use a range of tools to manage credit risk. For lower-risk account holders, limits for intraday credit are regularly reviewed by the account holder's ARB.⁷⁹ Account holders eligible for regular discount window access pay a fee of 50 basis points (on an annualized basis) for intraday credit but pay no fee for intraday credit secured by collateral. Account holders without regular access to the discount window pay a higher, penalty fee for intraday credit (regardless of whether its collateralized) because they are not supposed to incur daylight overdrafts. Higher-risk account holders are assigned a zero net debit cap and may face

⁷⁷ The participant could reinstate the Fedwire funds transfer once it funds its master account.

⁷⁸ Under the PSR policy, each institution that maintains a master account at a Reserve Bank is assigned or may establish a net debit cap, which limits the amount of uncollateralized intraday Reserve Bank credit that the institution may use during the Fedwire Funds Service funds-transfer business day. Generally speaking, the net debit cap is the maximum amount of uncollateralized daylight overdrafts that an institution is permitted to incur in its master account at any point in the day.

⁷⁹ As stated in footnote 67, the ARB generally oversees the administration of Federal Reserve credit, reserves, and risk management policies for a financial institution's operations nationwide. In general, a financial institution has only one master account, so the account-holding Reserve Bank and the ARB are the same.

additional controls, including collateral requirements and the rejection or delay of certain transactions when the balances in their accounts are insufficient. Furthermore, under Operating Circular 1, an ARB may also require an account holder to maintain adequate balances with a Reserve Bank in an amount determined by the ARB.⁸⁰

An account holder is not entitled to incur an overnight overdraft in its master account, even if it is eligible to borrow from the discount window,⁸¹ and is subject to a penalty fee for any overdrafts that extend beyond the close of the Fedwire Funds Service's funds-transfer business day.

4.3 A payment system or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.

As described in section 4.2 above, Reserve Banks may, among other steps, require the pledging of collateral by higher-risk account holders or prohibit institutions from using Reserve Bank intraday credit in order to protect themselves from the risk of loss. They may also require account holders to maintain certain balances.

Under Reserve Bank operating circulars, collateral pledged by a customer to a Reserve Bank secures the payment of all obligations that customer owes to any Reserve Bank. If an account holder does not meet its obligations, whether because it fails or otherwise, the Reserve Bank to which the collateral is pledged could liquidate or otherwise dispose of the collateral to satisfy the outstanding obligations.

For lower-risk account holders, the PSR policy provides incentives for institutions to pledge collateral voluntarily to secure daylight overdrafts, thereby helping to mitigate the credit exposures to the Reserve Banks from daylight overdrafts. Institutions that secure their use of intraday credit with collateral are not charged for these daylight overdrafts, while institutions that incur uncollateralized daylight overdrafts are charged a fee.

Reserve Bank losses would be absorbed by the Reserve Bank that extended the credit. As the operational arm of the central bank of the United States, Reserve Banks are not subject to capital or liquidity constraints that apply to private-sector FMIs.

4.4 A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a CCP that is involved in activities with a more-complex risk profile, or that is systemically important in multiple jurisdictions should maintain additional

⁸⁰ See Operating Circular 1, *supra* note 8, ¶ 2.11.

⁸¹ An institution eligible to borrow from the discount window could request a loan from its Reserve Bank to cover a daylight overdraft so it does not become an overnight overdraft. If the loan request is granted and the amount of the loan is sufficient to cover the overdraft, then no overnight overdraft would occur.

financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.

This consideration is not applicable because the Fedwire Funds Service is not a CCP.

- 4.5 A CCP should determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and thorough analysis of stress testing scenarios, models, and underlying parameters and assumptions used to ensure they are appropriate for determining the CCP's required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a CCP's participants increases significantly. A full validation of a CCP's risk-management model should be performed at least annually.**

This consideration is not applicable because the Fedwire Funds Service is not a CCP.

- 4.6 In conducting stress testing, a CCP should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.**

This consideration is not applicable because the Fedwire Funds Service is not a CCP.

4.7 An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI’s process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.

Under Regulation J and Operating Circular 6, if a Fedwire Funds Service participant sends a payment order to a Reserve Bank and the Reserve Bank executes the payment order, the Reserve Bank’s payment to the receiving Service participant is final at the earlier of the time when the Reserve Bank credits the receiving participant’s master account or sends the receiving participant a corresponding advice of credit, regardless of whether the sending Service participant meets its obligation to pay the Reserve Bank for the amount of the payment order.⁸² For this reason, if the sending participant’s Reserve Bank permitted the participant to overdraw its master account by accepting the payment order it was sent and if the sending participant did not subsequently cover that overdraft, the Reserve Bank holding the master account could incur a loss. As discussed in sections 4.1 and 4.2, the Reserve Banks have a range of tools to help them monitor and manage credit risk. Among other things, the Reserve Banks generally have a security interest in all property of their customers in their possession or control.⁸³ Such collateral could be used to offset what would otherwise be a loss to the account-holding Reserve Bank.

As the operational arm of the central bank of the United States, the Reserve Banks will be able to provide liquidity to Fedwire Funds Service participants even in stress events.

⁸² For additional information on settlement finality, see Principle 8, *Settlement finality*.

⁸³ See Operating Circular 1, *supra* note 8, § 5.3.

Principle 5: Collateral

An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Each Reserve Bank manages credit risk posed by its customers across all Reserve Bank financial services, not just the Fedwire Funds Service. By policy of the Board of Governors, collateral decisions, like credit risk management decisions, are handled by Reserve Bank employees that are separate from the employees that provide Reserve Bank financial services, such as the Fedwire Funds Service.⁸⁴ The discussion below, therefore, considers how the Reserve Banks impose collateral requirements on Fedwire Funds Service participants through their credit risk management functions (rather than the Fedwire Funds Service). The presence or absence of collateral, the valuation of collateral, and the margins applied to collateral have no direct effect on the operations of the Fedwire Funds Service.⁸⁵ In other words, no Reserve Bank application checks whether the Fedwire Funds Service participants identified in a Fedwire funds-transfer message have pledged collateral (or what the value of that collateral is) before the Service processes that message.⁸⁶

5.1 An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.

Collateral pledged to a Reserve Bank by a Fedwire Funds Service participant must be acceptable to that Reserve Bank. The Reserve Banks accept a wide range of collateral that generally meet regulatory standards for sound asset quality; detailed criteria for accepting certain types of assets as collateral are set forth in the Reserve Banks' collateral guidelines.⁸⁷ The Reserve Banks periodically review these criteria to assess whether any changes should be made.

Once an institution has pledged assets as collateral, the Reserve Bank to which the assets have been pledged conducts periodic reviews of certain assets. If an asset is determined to no longer meet the Reserve Bank's eligibility requirements, that Reserve Bank will reduce the collateral value of that asset to zero and request that the institution withdraw the asset from the pledge.

⁸⁴ See Standards Related to Priced-Service Activities of the Federal Reserve Banks, *supra* note 23, at 9–1570.

⁸⁵ In some instances, as part of the risk controls it applies to an account holder, the ARB may require the institution to collateralize its net debit cap and may choose to monitor the institution's account in real time against the level of the net debit cap, such that Fedwire funds-transfer messages that would exceed the institution's net debit cap would be rejected.

⁸⁶ By contrast, as discussed in section 4.1, it is possible for the Reserve Banks to implement real-time monitoring of Fedwire Funds Service transactions such that funds-transfer messages could be rejected if they result in an overdraft in a sending participant's master account or would cause the sending participant to breach its net debit cap. In the absence of such monitoring, however, the Fedwire Funds Service will process such messages even if they result in an overdraft in a sending participant's master account or a breach of the participant's net debit cap.

⁸⁷ See Federal Reserve Banks, Federal Reserve Collateral Guidelines, *available at* <https://www.frbdiscountwindow.org/pages/collateral>.

5.2 An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.

Collateral pledged to the Reserve Banks is valued using third-party pricing or, if third-party pricing is not available, using Reserve Bank internal models; in either case, collateral is subject to haircuts. The internal models the Reserve Banks use for collateral valuation and haircutting are subject to annual validation and recalculation. Haircuts are established based on the historical price volatility of each category of collateral, measured over typical liquidation periods. A detailed listing of Reserve Bank collateral haircuts is available online.⁸⁸

Reserve Banks also have the discretion to increase the haircuts they apply to collateral as they deem appropriate for effective risk management. For instance, an additional haircut will generally be applied to collateral that is pledged by depository institutions that would not be eligible for the Reserve Banks' primary credit program under Regulation A.⁸⁹

5.3 In order to reduce the need for procyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.

Reserve Banks accept a wide range of assets as collateral. Most collateral consists of either securities or loans. The latter category includes commercial loans, consumer loans, and loans guaranteed by U.S. federal agencies.

In general, the Reserve Banks seek to value securities and loan collateral at a fair market value estimate. Haircuts are applied to the fair market value estimate and are designed to account for the risk characteristics of the pledged asset, as well as the volatility of the value of the pledged asset over an estimated liquidation period.

Haircuts for securities used as collateral are assigned based on asset type and duration. The size of the haircuts is based on the historical price volatility of each category, measured over typical liquidation periods.

Haircuts for loans used as collateral are assigned based on reported cash flow characteristics. The size of the haircuts is based on the historical volatility of risk-free rates and proxy credit spreads, measured over typical liquidation periods.

Haircuts are typically reviewed annually, updated as needed, and conservatively based on historical data over typical liquidation periods. Haircuts are not procyclical insofar as, historically, they have not been adjusted in response to short-term price volatility.

For additional information, please refer to the Reserve Banks' collateral valuation.⁹⁰

5.4 An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant

⁸⁸ See Federal Reserve Banks, Federal Reserve Discount Window & Payment System Risk Collateral Margins Table, available at https://www.frbdiscountwindow.org/Pages/Collateral/collateral_valuation.

⁸⁹ See 12 CFR § 201.4(a) (availability and terms of primary credit).

⁹⁰ See Federal Reserve Collateral Valuation, *supra* note 88.

adverse price effects.

The Reserve Banks generally do not employ position size or concentration limits or require haircuts to vary by size or concentration. Reserve Banks have the ability to hold assets as long as is necessary to liquidate without having an adverse impact on markets.

5.5 An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.

Before entering into an arrangement with a foreign custodian to hold certain foreign-issued or -denominated securities pledged by depository institutions, a Reserve Bank conducts certain legal due diligence to assess, among other things, its ability to liquidate such collateral in a timely manner. Currently, the only arrangements of this type are with the central securities depositories Euroclear Bank S.A./N.V. and Clearstream Banking S.A.

These custodians screen collateral pledged by Reserve Bank customers against eligibility criteria predetermined by the Reserve Banks. The eligibility standards help to ensure the Reserve Banks accept high-quality collateral, which contributes to mitigating the risk of loss that a Reserve Bank has to its account holders. Only investment-grade securities in certain asset classes are accepted, for example. Further, securities not denominated in U.S. dollars are accepted only if they are denominated in one of a specified set of currencies.⁹¹ The exchange rate risk of those foreign-denominated securities is mitigated by adding an additional haircut. The adequacy of that additional haircut is reevaluated each time margins are respecified and is monitored on an ongoing basis between recalculations.

To be acceptable as collateral, all securities must meet certain standards relating to credit, legal, and valuation risk.⁹² Reserve Banks take steps to ensure a first-priority perfected security interest in such securities.

5.6 An FMI should use a collateral management system that is well-designed and operationally flexible.

Reserve Banks operate a collateral management system that is flexible enough to record and report on the wide range of assets Reserve Bank customers pledge as collateral. Loan and securities collateral is onboarded through each Reserve Bank into a centralized collateral management application. The collateral management system records and maintains information on deposits and withdrawals of collateral throughout the business day and provides Reserve Bank customers with real-time information about the value of the collateral they have pledged. Each Reserve Bank has the ability to transfer collateral administration activities to alternate Reserve Banks to ensure business operations can be conducted without interruption and regularly tests its ability to execute those transfers. The Reserve Banks rely on third-party vendor prices for valuation but have alternate ways to value collateral when such prices do not exist or are not available.

⁹¹ Currently, the only acceptable foreign currencies are Australian dollars, British pounds, Canadian dollars, Danish kroner, euros, Japanese yen, Swedish kronor, and Swiss francs.

⁹² Securities may not be obligations of the pledging institution or an affiliate of the pledging institution, or otherwise correlated with the financial condition of the pledging institution.

Principle 6: Margin

A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

This principle is not applicable to the Fedwire Funds Service.

Principle 7: Liquidity risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Because the Fedwire Funds Service is a credit-transfer (i.e., credit push) system, to the extent that liquidity is needed for the operation of the Service, it is needed by senders in the Service. This liquidity may be provided by these senders' account-holding Reserve Banks to settle payment orders they send through the Service.⁹³ The use of Reserve Bank liquidity is governed by procedures and controls implemented by each participant's ARB that are separate from the operation of the Service. For more detail about Reserve Bank credit that may be used as liquidity, refer to Principle 4, *Credit risk*.

7.1 An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.

As the operational arm of the central bank of the United States, the Reserve Banks are not subject to liquidity constraints that apply to private-sector FMIs, including when the Reserve Banks provide liquidity to Fedwire Funds Service participants. As noted in section 7.2 below, however, the Reserve Banks apply the framework outlined in part II of the PSR policy to manage the liquidity they provide to their customers, some of which are Fedwire Funds Service participants, and the credit risk those customers may pose to them. It is important to note that the Reserve Banks perform this function outside their role as operator of the Fedwire Funds Service.

7.2 An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.

Reserve Banks have automated systems, including a range of risk controls, to monitor and manage liquidity used by customers, including Fedwire Funds Service participants, and to manage the resulting credit risk those customers pose.⁹⁴ These include tools to monitor account balances, report and price overdrafts in Reserve Bank master accounts, manage collateral posted to the Reserve Banks, and compile information for assessing the financial condition of Reserve Bank customers. As noted in section 4.1, the Reserve Banks can monitor

⁹³ Participants do not need access to liquidity as receivers of advices of credit over the Service.

⁹⁴ As a general matter, balances held in a Fedwire Funds Service participant's master account are available for settlement purposes throughout the Fedwire Funds Service funds-transfer business day. In addition, under part II of the PSR policy, most Service participants have access to intraday credit provided by the Reserve Banks that hold their accounts. This converts the liquidity risk otherwise borne by participating institutions into credit risk borne by the Reserve Banks. Although the intraday credit provided by the Reserve Banks is sufficient for most Service participants, the limits prescribed by the PSR policy on how much intraday credit a Reserve Bank customer may use could constrain some Service participants' payment operations. Such constraints, however, must be managed by the Service participants themselves and do not affect the functioning of the Service. For more detail on how the Reserve Banks manage credit risk, see Principle 4, *Credit risk*, and part II of the PSR policy, *supra* note 4.

payment activity and intraday account balances of customers in real time throughout the business day and may restrict their access to Reserve Bank intraday credit. If a Reserve Bank subjects a customer that is a Service participant to real-time monitoring, the Reserve Bank will reject a Fedwire funds transfer initiated by that participant if the amount of the funds transfer exceeds the total of the participant's available master account balance and its permitted daylight overdraft capacity, if any.⁹⁵ For more detail on the range of risk management tools used by the Reserve Banks to control the credit risk of their customers, see Principle 4, *Credit risk*.

Moreover, the Reserve Banks provide their customers, including Fedwire Funds Service participants, with intraday and *ex post* tools to monitor and manage master account balances, net debit caps, collateral pledged to the Reserve Banks, and the use of Reserve Bank intraday credit.⁹⁶

7.3 A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.

This consideration is not applicable. The Reserve Banks do not hold liquid resources to meet obligations that may arise in operating the Fedwire Funds Service because the Reserve Banks, as the operational arm of the central bank of the United States, can create U.S. dollar liquidity as needed, and the Service only settles in U.S. dollars.

7.4 A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile, or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.

This consideration is not applicable because the Fedwire Funds Service is not a CCP.

⁹⁵ In such a case, the participant may initiate the funds transfer again when it has sufficient funds or daylight overdraft capacity to make the transfer.

⁹⁶ For more detail, see the Reserve Banks' account management guide, which is a comprehensive reference guide for Reserve Bank customers to manage their master accounts. See Federal Reserve Banks, Account Management Guide, available at <https://www.frb services.org/assets/resources/rules-regulations/account-management-guide.pdf>.

7.5 For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.

This consideration is not applicable. As noted, the Reserve Banks are not subject to liquidity constraints, so there is no need for them to hold liquid resources.

7.6 An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.

This consideration is not applicable. As noted, the Reserve Banks are not subject to liquidity constraints, so there is no need for them to hold liquid resources.

7.7 An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.

This consideration is not applicable. The Reserve Banks do not use external liquidity providers in connection with the Fedwire Funds Service because the Reserve Banks, as the operational arm of the central bank of the United States, can create U.S. dollar liquidity as needed, and the Service only settles in U.S. dollars.

7.8 An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.

The Reserve Banks are the operational arm of the central bank of the United States, and all Fedwire funds transfers are settled on the books of the Reserve Banks, so all activity through the Fedwire Funds Service is settled using central bank accounts and payment services.

7.9 An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI, and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.

As noted, the Fedwire Funds Service does not face liquidity risk, even under extreme-stress scenarios, so there is no need for the Reserve Banks to stress test their liquid resources.

7.10 An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

The Fedwire Funds Service is an RTGS system with immediate settlement finality. By definition, such a system meets this requirement.

For more detail on these matters, see Principle 1, *Legal basis*, Principle 8, *Settlement finality*, and Principle 13, *Participant-default rules and procedures*.

Principle 8: Settlement finality

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

8.1 An FMI's rules and procedures should clearly define the point at which settlement is final.

As discussed in Principle 1, *Legal basis*, Regulation J provides the legal foundation for settlement finality in the Fedwire Funds Service. Payment to the receiving participant over the Service is final and irrevocable upon the crediting of the receiving participant's master account or when the advice of credit is sent to the receiving participant, whichever is earlier. Payment orders generally are processed promptly following a Reserve Bank's receipt of a transfer message.

As stated in section III under *Legal and Regulatory Framework*, the liquidation provisions of U.S. banking laws do not contain a zero hour rule that would have the effect of voiding a settled funds transfer made over the Fedwire Funds Service involving an insolvent participant. Under U.S. banking law, payment from a sender to a receiver over the Fedwire Funds Service would not be affected by the subsequent insolvency of a participant unless a court finds the payment void after the fact as a fraudulent transfer or unlawful preference or due to other inequitable conduct. Such determinations, however, would be unrelated to the finality of a funds transfer made through the Fedwire Funds Service or of settlement for payment orders related to that funds transfer. In such a case, the payment from the Reserve Bank to the Fedwire receiver will remain final, but the payment from the originator to the beneficiary may be voided. Absent inequitable conduct on the part of a receiving bank, the receiving bank processing the payment should not be implicated by such determinations, which only affect the discharge of the obligations as between the originator and the beneficiary.

For more detail on a Reserve Bank's potential exposure to a sending participant once payment to the receiving participant is final, see Principle 4, *Credit risk*.

8.2 An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.

The Reserve Banks settle payment orders in real time as the Fedwire Funds Service processes them. The Reserve Banks typically effect settlement by debiting the sending participant's Reserve Bank master account and crediting the receiving participant's Reserve Bank master account. However, payment to the receiving participant is final and irrevocable at the earlier of the credit to the receiving participant's master account or when the advice of credit is sent to the receiving participant.

An online receiving participant will receive a payment order as an electronic advice of credit through the Fedwire Funds Service promptly after the Service processes a transfer message. An online sending participant will receive an electronic acknowledgment of a payment order through the Service promptly after the Service processes the payment order.

The Reserve Banks provide all offline sending and receiving participants with advices and acknowledgments regarding payment orders processed through the Fedwire Funds Service with the participants' daily account statements. The Reserve Banks also attempt to provide advices of credit by telephone to offline receiving participants in most circumstances.⁹⁷

8.3 An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.

Under Article 4A, as incorporated into subpart B of Regulation J, a Fedwire Funds Service sending participant is permitted to revoke a payment order only if the participant provides its Reserve Bank with a cancellation notice at a time and in a manner affording the Reserve Bank reasonable opportunity to act on the notice before the Reserve Bank accepts the payment order.⁹⁸ In practice, however, the Reserve Banks have eliminated the opportunity for participants to revoke payment orders sent through the Service because the Service's real-time, automated processing eliminates the time between the Reserve Banks' receipt and acceptance of payment orders. Once a payment order has been accepted by a Reserve Bank, a participant may no longer revoke it.⁹⁹

Operating hours and cutoff times for submission of funds-transfer messages are clearly defined on a schedule published on the Reserve Banks' publicly accessible financial services website, FRBservices.org.¹⁰⁰ The Reserve Banks may unilaterally change these times as deemed necessary to facilitate special market needs.¹⁰¹ Guidelines indicating how Fedwire Funds Service participants may request an extension of operating hours, as well as the limited and defined circumstances under which an extension may be granted, are published on FRBservices.org.¹⁰² Any change in operating hours is broadcast electronically to all participants using the FedLine Direct solution. It is also posted on the FedLine homepage (for participants using the FedLine Advantage solution) and on the Service Status page of FRBservices.org (so offline participants and others may be aware).¹⁰³

⁹⁷ The Reserve Banks will not necessarily provide advices of credit by telephone for bank-to-bank transfers. See Operating Circular 6, *supra* note 10, ¶ 11.2. For more detail on the offline service, see section III, *General Background of the Fedwire Funds Service*.

⁹⁸ UCC § 4A-211(b).

⁹⁹ A participant may send a nonvalue message through the Fedwire Funds Service to request that a payment order accepted by its Reserve Bank be canceled or that the amount of the payment order otherwise be returned to the sender. The Fedwire Funds Service will send each of these requests for reversal to the Fedwire receiver identified in the message; these reversal requests will not, however, revoke payment orders accepted by a Reserve Bank.

¹⁰⁰ Federal Reserve Banks, Fedwire Funds Service Schedule, *available at* <https://www.frbservices.org/resources/financial-services/wires/operating-hours.html>.

¹⁰¹ *Id.*

¹⁰² See Federal Reserve Banks, Fedwire Funds Service Extension guidelines, *available at* <https://www.frbservices.org/resources/financial-services/wires/extension-guidelines.html>.

¹⁰³ *Id.*

Principle 9: Money settlements

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimize and strictly control the credit and liquidity risk arising from the use of commercial bank money.

9.1 An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.

All Fedwire funds transfers are settled on the books of the Reserve Banks and thus in central bank money. Refer to Principle 8, *Settlement finality*, for a discussion of the settlement finality of Fedwire funds transfers, Principle 4, *Credit risk*, for a discussion of how the Reserve Banks manage credit risk in connection with providing the Service, and Principle 7, *Liquidity risk*, for a discussion of liquidity risk.

9.2 If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.

This consideration is not applicable to the Fedwire Funds Service because, as stated in section 9.1, all Fedwire funds transfers settle in central bank money.

9.3 If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalization, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.

This consideration is not applicable to the Fedwire Funds Service because, as stated in section 9.1, all Fedwire funds transfers settle in central bank money.

9.4 If an FMI conducts money settlements on its own books, it should minimize and strictly control its credit and liquidity risks.

This consideration is not applicable to the Fedwire Funds Service because, as stated in section 9.1, all Fedwire funds transfers settle in central bank money, so the credit and liquidity risks with which the consideration is concerned are avoided.¹⁰⁴

9.5 An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally

¹⁰⁴ Based on the explanatory notes in the PFMI, this consideration appears to be relevant only if two conditions are met: (1) money settlements do not occur in central bank money and (2) the FMI conducts money settlements on its own books. See Principles for Financial Market Infrastructures, *supra* note 2, ¶ 3.9.7. The Fedwire Funds Service conducts money settlements on its own books (technically, on the books of the Reserve Banks, which operate the Service), but those settlements occur in central bank money, as stated in section 9.1. Thus, only one of the two conditions is met, and the consideration is not applicable.

intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.

This consideration is not applicable to the Fedwire Funds Service because the Service does not use third-party settlement banks. As stated in section 9.1, Fedwire funds transfers settle on the books of the Reserve Banks.

Principle 10: Physical deliveries

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

This principle is not applicable to the Fedwire Funds Service.

Principle 11: Central securities depositories

A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues, and minimize and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilized or dematerialized form for their transfer by book entry.

This principle is not applicable to the Fedwire Funds Service.

Principle 12: Exchange-of-value settlement systems

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

This principle is not applicable to the Fedwire Funds Service.

Principle 13: Participant-default rules and procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

13.1 An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.

As a central bank operated RTGS system, neither the Fedwire Funds Service itself nor its non-defaulting participants are affected by participant defaults. Instead, the Board of Governors requires the Reserve Banks to follow the PSR policy both in managing the credit risk that their customers (including Fedwire Funds Service participants) pose to them and in providing liquidity to those customers. As more fully described in Principle 4, *Credit risk*, the Reserve Banks perform those functions outside their role as operator of the Fedwire Funds Service.

The rules and procedures of the Fedwire Funds Service enable the Reserve Banks to continue to settle payment orders sent through the Service in a timely manner even if one or more participants default. This is true even in extreme market scenarios. Defaults by sending participants will not affect receiving participants because credits to receiving participants' master accounts are final at the earlier of when they are made or when advices of credit are sent by the Reserve Banks.¹⁰⁵ Therefore, non-defaulting participants in the Service are not exposed to losses caused by a defaulting participant's failure to meet an obligation to its Reserve Bank. Moreover, there is a clear framework for most Service participants to access intraday credit provided by the Reserve Banks under part II of the PSR Policy, which converts the liquidity risk that might otherwise be borne by participants into credit risk borne by the Reserve Banks. Reserve Banks, as the operational arm of the central bank of the United States, can absorb this risk because they are not subject to liquidity constraints and therefore can meet their obligations to all receiving participants even if one or more sending participants default. For more details, see Principle 7, *Liquidity risk*.

In addition, under Operating Circular 1 and Regulation J, each Service participant (either as a master account holder or as a sender of a Fedwire funds transfer) grants its Reserve Bank a security interest in all of its property in the possession or control of, or maintained with, any Reserve Bank to secure overdrafts in its master account or any other obligation owed to a Reserve Bank.¹⁰⁶ In the case of a participant default, the Reserve Banks retain the right to liquidate collateral or to take any other action authorized by law to satisfy outstanding obligations.

Through application of the rules governing the Service and the PSR policy, the Reserve Banks are able to contain and manage risks associated with participant defaults without transmitting those risks through the Fedwire Funds Service to the Service's direct participants or the financial system more generally.

¹⁰⁵ For more detail on the finality of Fedwire funds transfers, see Principle 8, *Settlement finality*.

¹⁰⁶ In the case of Regulation J, the grant of security interest is somewhat more limited than stated here; it covers all "the sender's assets in the possession of or held for the account of the Federal Reserve Bank" and attaches only when an overdraft or other obligation to that Reserve Bank becomes due and payable. See 12 CFR § 210.28(b)(3).

13.2 An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.

This consideration is not applicable because, as described in section 13.1, the Fedwire Funds Service does not have, and does not need, specialized default rules and procedures.

13.3 An FMI should publicly disclose key aspects of its default rules and procedures.

This consideration is not applicable because, as described in section 13.1, the Fedwire Funds Service does not have, and does not need, specialized default rules and procedures. All key rules and procedures pertaining to the Fedwire Funds Service are publicly disclosed on the Reserve Banks' financial services website, FRBservices.org. For more detail on the disclosure of rules and procedures governing the Service, see Principle 23, *Disclosure of rules, key procedures, and market data*.

13.4 An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.

This consideration is not applicable because, as described in section 13.1, the Fedwire Funds Service does not have, and does not need, specialized default rules and procedures.

Principle 14: Segregation and portability

A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

This principle is not applicable to the Fedwire Funds Service.

Principle 15: General business risk

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialize. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

15.1 An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.

FRFS manages the risks and potential losses associated with the general business risk of operating the Fedwire Funds Service by carefully controlling costs and projecting revenues to help ensure that in setting fees for the Service, revenues match operating costs over the long run. Actual costs are monitored on an ongoing basis, and projected costs are closely scrutinized as part of the annual budgeting process. If FRFS efforts to control operating costs fall short, it would consider raising prices or taking other measures to enhance revenue. Given the cost-recovery time horizon, described in greater detail below, these actions can be done in a measured way.

As required by the Monetary Control Act, the Fedwire Funds Service is among the Reserve Bank financial services required to be priced to fully recover, over the long run, all direct and indirect costs and imputed costs, including financing costs, taxes, and certain other expenses that would have been paid as well as the return on equity (i.e., profit) that would have been earned if a private business firm provided the services.¹⁰⁷ The Service is priced to cost recover over the long run, which serves as a mitigant to potential losses stemming from poor execution of business strategy, negative cash flows, or unexpected or excessively large operating expenses by allowing the Reserve Banks to adjust pricing as required (subject to approval by the Board of Governors). Cost-recovery performance, including the underlying revenue and cost statistics, are monitored on a monthly basis against budgeted performance. On an annual basis, FRFS conducts a repricing exercise to determine whether changes in prices for the following year are necessary to ensure long-term cost-recovery.

The robust repricing exercise conducted by FRFS includes the development of volume and revenue projections that incorporate in-depth analysis of potential drivers of demand for the Service's revenue-generating products, such as economic conditions and exogenous market and policy developments. Using projected revenues and costs, FRFS conducts analysis on potential cost-recovery scenarios to determine the appropriate fees for the following year.¹⁰⁸ In addition, annual repricing is reviewed and approved by the Board of Governors, which publishes a description of the new pricing and the factors influencing the fee calculation in the Federal Register and on its public website.¹⁰⁹

¹⁰⁷ See Principles for Pricing of Federal Reserve Bank Services, *supra* note 61, at 9–1568 (principle 3).

¹⁰⁸ See, e.g., Board of Governors of the Federal Reserve System, Federal Reserve Bank Services, 87 Fed. Reg. 79310 (Dec. 27, 2022).

¹⁰⁹ See, e.g., *id.*

15.2 An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.

The *Application of the Principles for Financial Market Infrastructures to Central Bank FMIs* notes that, given a central bank’s inherent financial soundness, the requirement under Principle 15, *General business risk*, to hold liquid net assets funded by equity to cover business risk and support a recovery or wind-down plan does not apply to central bank–operated FMIs like the Fedwire Funds Service.¹¹⁰ Nevertheless, to foster competition with private-sector FMIs, the Board of Governors mandates that the Reserve Banks hold six months of the Service’s current operating expenses as unencumbered liquid financial assets and an equal or greater amount of equity on the pro forma balance sheet, which affects Reserve Bank priced services’ fees.¹¹¹ The unencumbered liquid financial assets imputed on the pro forma balance sheet for priced services consist of federal funds (fed funds) and U.S. Treasury securities.¹¹²

The Service’s six months of current operating expenses are computed based on its annual budget as approved by the Board of Governors.¹¹³ The Service meets the requirement through the investments and equity imputed to the priced services pro forma balance sheet. If the imputed investments or equity in a given year would not be sufficient to cover the six-month requirement, additional investments or equity would be imputed, with the incremental cost associated with imputing additional investments or equity allocated exclusively to the Service.¹¹⁴ In applying the PSR policy to the Reserve Banks’ operation of the Fedwire Funds Service, the Board has stated that it “will monitor the implementation of Regulation HH and the final policy for issues of consistency and competitive equity between private-sector systems and the Fedwire Funds Service.”¹¹⁵

15.3 An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.

¹¹⁰ Application of the Principles for Financial Market Infrastructures to Central Bank FMIs, *supra* note 6, at 1.

¹¹¹ See Board of Governors of the Federal Reserve System, Federal Reserve Bank Services, 85 Fed. Reg. 73037, 73039 (Nov. 16, 2020).

¹¹² A fed funds transaction is an unsecured, U.S. dollar–denominated loan to a depository institution by another depository institution or eligible institution.

¹¹³ See Federal Reserve Bank Services, 85 Fed. Reg. at 73039.

¹¹⁴ See Policy on Payment System Risk, 79 Fed. Reg. at 67329-30.

¹¹⁵ *Id.* at 67330.

As noted in *Application of the Principles for Financial Market Infrastructures to Central Bank FMI*s, although a central bank should plan for an orderly and transparent termination of a central bank–operated FMI service, a central bank’s ability to ensure continuity of operations as necessary in extreme financial circumstances means that the requirements to prepare recovery and orderly wind-down plans do not apply.¹¹⁶ Consistent with this notion and the fact that the Reserve Banks do not face the risk that a business shock would cause the Fedwire Funds Service to wind down in a disorderly manner, the Board of Governors does not require the Service to develop recovery or orderly wind-down plans.¹¹⁷ The Board of Governors does, however, expect the Reserve Banks to follow policies consistent with financial stability and established principles of entering and exiting Reserve Bank priced services.¹¹⁸

As noted in section 15.2, the Board of Governors mandates that the Reserve Banks hold six months of the Fedwire Funds Service’s current operating expenses as unencumbered liquid financial assets and an equal or greater amount of equity on the pro forma balance sheet.

15.4 Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.

The unencumbered liquid financial assets imputed on the pro forma balance sheet for the purposes described in section 15.2 consist of fed funds and U.S. Treasury securities. The Board of Governors considers such assets to be high quality and sufficiently liquid to meet the requirement it imposes on the Reserve Banks.

15.5 An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.

The *Application of the Principles for Financial Market Infrastructures to Central Bank FMI*s also notes that the requirement under Principle 15, *General business risk*, to maintain a plan to raise additional equity does not apply to central bank–operated FMI)s like the Fedwire Funds Service given a central bank’s inherent financial soundness.¹¹⁹

As stated in section 15.2, the Reserve Banks hold six months of the Fedwire Funds Service’s current operating expenses as unencumbered liquid financial assets and equity on the pro forma balance sheet to satisfy the Board of Governors’ requirement. If the investments and equity imputed to the priced services’ balance sheet in a given year are not sufficient to cover

¹¹⁶ *Application of the Principles for Financial Market Infrastructures to Central Bank FMI*s, *supra* note 6, at 1.

¹¹⁷ Policy on Payment System Risk, 79 Fed. Reg. at 67329.

¹¹⁸ *Id.* If a Reserve Bank intended to withdraw from a priced service like the Fedwire Funds Service, among other factors, the Board of Governors would consider whether the public benefit of continuing to provide the service would outweigh the benefits of withdrawing from the service. Board of Governors of the Federal Reserve System, Factors for Evaluating Reserve Bank Requests to Withdraw from a Priced Service Line, *Federal Reserve Regulatory Service* 9–1575 (1992).

¹¹⁹ *Application of the Principles for Financial Market Infrastructures to Central Bank FMI*s, *supra* note 6, at 1.

the requirement, additional investments or equity would be imputed, with the incremental cost associated with imputing additional investments or equity allocated exclusively to the Service.

Principle 16: Custody and investment risks

An FMI should safeguard its own and its participants' assets and minimize the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

16.1 An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

The Fedwire Funds Service does not have assets that are independent of the assets of the Reserve Banks that operate the Service.

Moreover, the Fedwire Funds Service itself does not hold assets of its participants. Rather, the Service operates by debiting and crediting participants' accounts held directly on the books of one or more Reserve Banks. Balances held in master accounts at the Reserve Banks are not generally invested.¹²⁰

The Reserve Banks' accounting practices and internal controls are robust. The Reserve Banks follow specialized accounting standards and practices developed by the Board of Governors, based on generally accepted accounting principles, and tailored to the unique nature of the Reserve Banks as the operational arm of the central bank of the United States.¹²¹ To help ensure that the Reserve Banks maintain an effective internal control environment over financial reporting and operate efficiently and effectively, the Reserve Banks apply the 2013 integrated internal control framework of the Committee of Sponsoring Organizations of the Treadway Commission, voluntarily comply with the Sarbanes-Oxley Act of 2002, and implement and monitor a variety of other controls.

Reserve Bank accounting practices and internal controls are subject to internal and external audits and oversight by the Board of Governors and the GAO.

16.2 An FMI should have prompt access to its assets and the assets provided by participants, when required.

Because transfers through the Fedwire Funds Service are effected by debiting and crediting participants' master accounts held directly on the books of the Reserve Banks, and each participant grants the Reserve Banks a security interest in the participant's assets held at the Reserve Banks, the Reserve Banks have prompt access to assets of their participants to meet obligations the participants owe to the Reserve Banks.¹²² While these assets are available to

¹²⁰ The exception is that the Federal Reserve Bank of New York does invest balances it holds for certain foreign central banks and international organizations. These investments may take the form of overnight repurchase agreements or purchases of Treasury and other Fedwire securities that are held directly on the Federal Reserve Bank of New York's books.

¹²¹ The Reserve Banks' accounting practices deviate from generally accepted accounting principles in three material ways: (i) the Reserve Banks do not present a statement of cash flows, (ii) the Reserve Banks do not hold securities held for monetary policy purposes at fair value, and (iii) the Reserve Banks do not account for transactions executed for monetary policy purposes on trade date (they are accounted for on settlement date). For more detail, see the Reserve Banks' Financial Accounting Manual, which is available at <http://www.federalreserve.gov/monetarypolicy/files/BSTfinaccountingmanual.pdf>.

¹²² Participants are generally free to withdraw assets held at a Reserve Bank, but the Reserve Banks will

settle activity through the Service and protect the Reserve Banks from losses they might incur in connection with providing the Service (among other losses), the availability of these assets or others to buffer Reserve Bank losses does not affect the Reserve Banks' ability to operate the Service because the Reserve Banks are not subject to capital or liquidity constraints.

16.3 An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.

The Fedwire Funds Service does not use custodian banks. Refer to Principle 5, *Collateral*, for a discussion of Reserve Bank practices relating to collateral.

16.4 An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.

The Fedwire Funds Service does not have assets that are independent of the assets of the Reserve Banks that operate the Service, and the Reserve Banks do not invest their own assets or assets of their participants in connection with the Service.

not release assets held in restricted accounts on their books if the assets secure an extension of credit by a Reserve Bank or are used to meet a clearing balance requirement imposed by a Reserve Bank. Under certain conditions, the Reserve Banks will allow participants to hold assets outside the Reserve Banks to secure potential extensions of credit by a Reserve Bank, which also will be restricted from release if an extension of credit against those assets is outstanding. These collateral arrangements allow the Reserve Banks to obtain a security interest in assets held at a supervised central securities depository or a custodian approved by the participant's ARB. For more detail on the Reserve Banks' collateral programs, see Principle 5, *Collateral*, and the Federal Reserve Collateral Guidelines, *supra* note 87.

Principle 17: Operational risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.

17.1 An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.**Operational Risk Framework, Identification, and Management**

FRFS is responsible for operational risk management of the Fedwire Funds Service and leverages the FRFS risk-management framework (which is inclusive of the FRFS operational risk framework), the wholesale risk tolerance statement, and associated policies to manage and report on operational risks. This is done using various processes, tools, and reports, including self-assessments, risk event reporting, internal audit evaluations, and residual risk analysis. FRFS evaluates operational risk to the Service across a range of factors and scenarios that would affect the provision of services. As described in section 3.1, FRFS employs a three lines risk management model that emphasizes interaction and communication between the first line (business line) and second line (FRFS risk management), with independent oversight by the third line (internal audit).

As part of the first line, FRFS management and staff are responsible for managing and reporting on the risks associated with advancing the policy objectives of the Fedwire Funds Service. FRFS carries out these responsibilities by, among other things, collecting, classifying, and analyzing operational risk events, leveraging internal and external gap assessments, and evaluating results of security testing to inform the risk profile and develop a forward-looking view of operational risks to the Service.

FRFS monitors and reports operational risk through risk event analysis and reporting, responses to control findings from internal audit, and reporting on the Service's operational risk profile to the FRFS leadership team and the PC. FRFS also manages program risks resulting from large technology initiatives that are connected to the suite of applications that support the Service. FRFS assesses such risks, which are documented and tracked in risk registers, based on a mix of quantitative and qualitative factors. FRFS reports on key risks and mitigation strategies to FRFS management, the FRFS leadership team, and the PC regularly. The FRFS risk team, as part of the second line, performs independent review and challenge of these activities.

Policies, Processes, and Controls

There are a range of FRFS policies, processes, and controls that support the operational risk framework governing the Fedwire Funds Service. The FRFS risk event reporting policy defines the notification, escalation, and reporting requirements for all risk events. This includes technology policies, which include an information security assurance policy, and a program and project management standard for managing technology projects. FRFS has established personnel-related guidelines and processes, leveraging Reserve Bank policies. These policies

help to ensure effective ongoing operations and mitigate operational, technological, and human capital risks.

FRFS and National IT work with each Reserve Bank's human resources to hire, train, and retain qualified personnel. The key job responsibilities and associated skills are defined and used to recruit talent with appropriate technical and operational backgrounds. All employees, contingent workers, and vendor personnel that perform certain wholesale services-related functions or that have privileged access to wholesale services applications, including supporting technology infrastructure, must pass a rigorous security background screening process and are subject to periodic re-screening.

Staff members performing functions relating to or supporting the wholesale services are trained to perform their duties based on established operating procedures and practices.

All Reserve Bank employees are subject to a code of conduct and are subject to the same criminal conflict of interest statute that applies to federal government employees. Under those codes of conduct and the conflict-of-interest statute, a Reserve Bank employee is prohibited from participating personally and substantially in an official capacity in any particular matter in which, to the employee's knowledge, the employee (or certain related parties) has a financial interest if the particular matter will have a direct and predictable effect on that interest. Participation in a particular matter may include making a decision or recommendation, providing advice, or taking part in an investigation.

Reserve Bank employees are not permitted to own or control investments in depository institutions or affiliates of depository institutions. Employees are also prohibited from investing in certain thrift holding companies and investment funds that have a stated policy of concentrating their investments in the financial services sector. In order to avoid the appearance of conflicts of interest, Reserve Bank employees are generally not permitted to accept anything of value from a supervised institution or anyone that does business or seeks to do business with the Reserve Banks. This prohibition applies to gifts, meals, favors, and entertainment.

As described in detail in section 17.5, the Reserve Banks' approved information security program, Security Assurance for the Federal Reserve (SAFR), defines the rules, as well as the risk management process, that help the Reserve Banks manage information security risks, including those posed to the Fedwire Funds Service. The FRFS' technology and operations groups monitor and manage information security risks to the Service in accordance with SAFR.

FRFS adheres to a product management framework and promotes effective collaboration within FRFS and among key Federal Reserve System stakeholders and constituencies, including National IT and the Board of Governors. On strategically important initiatives, FRFS is advised by project-specific executive advisory groups composed of executive-level Reserve Bank and Board of Governors staff.

The FRFS product management framework is aligned with the Reserve Banks' program and project management standards and promotes collaboration in identifying and controlling risks for product development. The risk management plan specifically provides a method to manage risks to increase the likelihood of executing product development successfully. The quality-assurance framework describes requirements for a Fedwire Funds Service product or service to be fulfilled appropriately and includes management of the quality of requirements, designs, and testing components.

17.2 An FMI’s board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI’s operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.

As detailed in Principle 2, *Governance*, by agreement among the Reserve Banks, FRFS is responsible for the day-to-day management of the wholesale services, including the Fedwire Funds Service. The PC is responsible for assessing the adequacy and effectiveness of FRFS’ financial reporting controls, and risk management practices, including those relating to the Service. The Reserve Bank Audit Committee whose general auditor serves as the FRFS CGA is responsible for assessing the adequacy and effectiveness of the FRFS audit program and communicating the results to the PC. The PC receives reporting and briefings directly from the FRFS chief risk officer, CGA, and CPE. The PC periodically reviews and approves the FRFS risk-management framework and approves the service’s risk tolerance statement annually. The PC is also responsible for providing oversight, guidance and feedback regarding FRFS.

FRFS risk management function is responsible for supporting FRFS first line in the identification and assessment of key risks and for providing guidance to manage those risks in line with the service’s risk tolerance.

In addition, the PC provides direction to Reserve Bank financial services and considers risk management issues of common concern across the services, including the Fedwire Funds Service.

Audit, Review, and Testing

Internal audit through the FRFS CGA, as described in section 2.6, is responsible for working with Reserve Bank general auditors to provide an independent assessment of Fedwire Funds Service policies, procedures, and controls. The internal auditors perform an annual audit of the Fedwire Funds Service through a risk-based planning process that identifies inherent risks and related controls for key activities related to the Service’s operations, management, technology, and infrastructure. The internal auditors test and evaluate the design and effectiveness of the control environment to render an opinion. Internal audit actively participates on strategic Fedwire Funds Service technology change initiatives and periodically renders an opinion on project execution and the control environment. Internal audit reports the results of their work directly to the PC and the Reserve Bank Audit Committee of the FRFS CGA.

17.3 An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.

FRFS has established operating policies and business continuity management practices as well as performance objectives and service-level targets to benchmark operational availability, throughput, and end-to-end response times for the Fedwire Funds Service.¹²³ In 2022, the Fedwire Funds Service was available 100.000 percent of operating hours for all customers, which met the availability target of 99.985 percent of operating hours.

¹²³ The Service is considered unavailable when participants cannot send or receive Fedwire Funds Service messages because of the failure of Service-related applications, environmental software, or the Reserve Banks’ telecommunications network infrastructure.

FRFS has established monitoring controls and reviews performance metrics to evaluate the performance and reliability of the applications that support the Fedwire Funds Service. National IT provides periodic service-level agreement metric reporting, and the FRFS operations provide additional performance metrics (i.e., processing timeliness and accuracy) on a monthly basis. FRFS compiles this information and provides the combined monthly availability statistics and service quality metrics as part of its regular reporting to the PC.

17.4 An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.

The Fedwire Funds Service's available capacity is designed to adapt to changes in business requirements, environmental changes, and other external influences such as natural disasters. National IT, which is responsible for much of the technological infrastructure on which the Service depends, coordinates capacity planning and performance monitoring activities across the Reserve Banks' technological infrastructure. National IT is responsible for strategic and tactical planning in IT, as well as ongoing capacity management of networks, computing systems, storage systems, access solutions, and data center facilities for the Reserve Banks. National IT's capacity planning framework to help ensure the Reserve Banks' server, network, and storage capacity is tightly coupled to system and infrastructure resource utilization. The distributed server, data center, network, access solutions, and storage assets needed to support the Fedwire Funds Service are included in the capacity planning initiatives. Furthermore, National IT forecasts and evaluates application usage metrics used to assess the current capacity and projected usage of the Service's infrastructure and technology. FRFS has regular review meetings with National IT at which availability metrics, risk events, and capacity-related information are periodically reviewed. Prior to the implementation of new application software releases for the Fedwire Funds Service, FRFS conducts stress testing to ensure the system meets performance requirements.

17.5 An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.

The Reserve Banks' comprehensive principles, policies, and standards for information systems constitute the SAFR program. The program is risk based and includes principles pertaining to both physical and information security. It is informed by industry best practices, federal standards (including those developed by the National Institute of Standards and Technology), and relevant supervisory guidance, such as those issued by the Federal Financial Institutions Examination Council (FFIEC). FRFS utilizes the physical security, information security, and risk management principles embedded in the SAFR program to manage security assurance for the Fedwire Funds Service. Furthermore, FRFS relies on National IT, FRFS, and local Information Security teams to advise on strategies and tactics to boost its cyber resiliency posture.

Physical Security and Information Security

SAFR's physical and environmental protection policy for information systems addresses physical security and associated environmental risks posed to the Reserve Banks. The policy describes the procedures and controls to mitigate risks from physical access, visitors, water damage, fire, emergency shutoff, and power equipment and cable failure, among others. FRFS and other Reserve Bank service providers use this policy to assess and mitigate physical security risks for the Service. The SAFR program includes information security principles, policies, standards, checklists, and other supporting security artifacts that help ensure the Reserve Banks have sound information security practices. The program establishes security

requirements across 18 control groups to help the Reserve Banks protect the confidentiality, integrity, and availability of their information systems and the information those systems process, store, and transmit. The information security principles cover information security, access, classification and handling, personnel, and physical access. In addition, SAFR includes information security standards that provide controls for identifying, assessing, and managing security threats and vulnerabilities. These standards and controls help mitigate risks to the Fedwire Funds Service relating to data loss and leakage, data classification, security patching, personnel screening, privileged account monitoring, intrusion detection, end-user device protection, network access, server security, device configuration, and application vulnerability.

As described in Principle 2, *Governance*, the Federal Reserve Bank of Richmond operates National IT to provide a variety of services relating to information technology for the Reserve Banks, including information security. As a part of National IT, the National Information Security Assurance function in Richmond administers and manages the SAFR program for the Reserve Banks.

In addition, National IT has established risk management lifecycle documents that outline periodic risk assessment activities that can be undertaken at various points in the SAFR process. The purpose of the lifecycle documents is to establish approved methodologies and approaches for managing risk to Reserve Bank information and information systems. A central incident response team is responsible for coordinating the processes and controls related to security monitoring and incident responses. The team achieves this through proactive intelligence gathering, threat analysis, forensic investigations, security alerting, and incident response services.

Overall, FRFS has the responsibility for ensuring that the operations of the Fedwire Funds Service comply with applicable information security policies. To ensure FRFS fulfills this responsibility, FRFS coordinates SAFR activities for the wholesale services.

Operating Circular 5, *Electronic Access*, includes a high-level description of certain aspects of the Reserve Banks' information security program, as it applies to Fedwire Funds Service participants and their service providers that use the Reserve Banks' electronic access solutions.¹²⁴

17.6 An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical IT systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.

Objectives and Design of Business Continuity Plan

FRFS has a comprehensive business continuity plan to assess wholesale services-related application resiliency and contingency and to ensure a high degree of operational reliability for the Fedwire Funds Service suite of applications. The plan is based on the Federal Reserve

¹²⁴ Operating Circular 5, *supra* note 71, app. A.

System Business Continuity Framework, a series of business continuity principles developed by all 12 Reserve Banks to establish a common foundation for business continuity management across the Reserve Banks. The framework helps ensure that FRFS, in developing and maintaining the business continuity plan for the Fedwire Funds Service, takes a methodical approach to identifying, assessing, and controlling business continuity risks. The business continuity plan defines the roles and responsibilities, criticality assessment, and testing strategy for the Fedwire Funds Service. Roles and responsibilities for continuity planning and testing are shared among FRFS, and other Reserve Bank service providers. The business continuity plan for the Service was developed to address a variety of scenarios, such as loss of critical staff, loss of facilities, and loss of IT resources. FRFS reviews the plan at least annually and updates it as needed based on changes to business processes or system upgrades.

The FRFS business continuity plan was developed in accordance with the key elements of the *Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System*.¹²⁵ Specifically, the FRFS business continuity objectives include the following: (1) the rapid recovery and timely resumption of critical operations in advance of or following a wide-scale disruption; (2) the rapid recovery and timely resumption of critical operations in advance of or following the loss or inaccessibility of staff in at least one major operating location; and (3) a high level of confidence, through ongoing use or robust testing, that critical internal and external continuity arrangements are effective and compatible.

To help meet these objectives, the FRFS business continuity plan is augmented by Federal Reserve System-level communication and incident management protocols. These documents address the evaluation of incident impact, guide decision-making, and assign responsibilities across multiple Reserve Banks and business lines that provide or support FRFS. The protocols incorporate incident and problem management processes established by the Reserve Banks (1) to manage the rapid deployment of skilled personnel and resources to restore normal operations as quickly as possible and (2) to facilitate the review of critical incidents, determine root causes, and assist in the prevention of recurring problems. These roles are shared among FRFS and other Reserve Bank service providers, including National IT. The responsibilities include invoking incident response plans, restoring infrastructure, reestablishing electronic access for customers, validating application functionality, reconciling data, performing recovery analysis, and coordinating internal and external communications. Additionally, National IT is charged with deterring and remediating the technical aspects of information security incidents that affect the Service. FRFS and the System Crisis Communication Support Team jointly coordinate and prioritize communications with internal and external stakeholders so that they are aware of certain incidents and may respond by mitigating potential risks. FRFS has decision-making protocols concerning the ongoing operation (or resumption) of the Service that may be triggered depending on the event and its severity.

Redundant Data Centers

The Reserve Banks operate the applications that are necessary for the operation of the Fedwire Funds Service from multiple data centers located with sufficient geographical dispersion to mitigate the effects of most natural disasters, power and telecommunication outages, and other widespread regional disruptions. Wholesale service operations regularly rotate between two

¹²⁵ See Board of Governors of the Federal Reserve System, Office of the Comptroller of the Currency, & Securities and Exchange Commission, *Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System* (May 28, 2003), available at <http://www.federalreserve.gov/board/docs/srletters/2003/sr0309.htm>.

primary data centers. The data centers have the necessary staffing, equipment, and security to resume operations and include various contingency features, such as redundant power feeds, environmental and emergency control systems, dual computer and network operations centers, and dual customer service centers. The primary data centers include full same-site processing redundancy to address isolated component failures. The primary data centers also support full cross-site processing redundancy, so either data center can quickly take over production processing if the data center that had been processing production work is, or is expected to be, disrupted.

In the event of a primary data center outage or in advance of an impending event, the affected applications will be recovered to the other primary data center within an established time objective, with a somewhat longer recovery time for the various ancillary applications supporting the Fedwire Funds Service. These recovery objectives are documented requirements in agreements with Reserve Bank service providers. If, in the course of restoring production-processing capability, the Reserve Banks detect data loss, they have reconciliation processes in place to identify and inform customers of transactions that may need to be resubmitted.

The FRFS operations that support the Fedwire Funds Service are located in different geographic regions of the country to help ensure they can continue to support the Service even in the midst of a widespread disruption. Furthermore, FRFS splits personnel with key recovery and crisis management responsibilities between these locations to help ensure critical operations can be conducted if a disruptive event affects a particular region. Fully trained personnel capable of opening, running, and closing the applications that support the Fedwire Funds Service are located in multiple locations around the country.

Review and Testing

FRFS reviews and tests its business continuity capabilities regularly. FRFS and its Reserve Bank service providers conduct several alternate site recovery tests per year for the Fedwire Funds Service. In addition, once a year, FRFS conducts a third site test in which core Service applications are failed over to the Service's backup data center.

FRFS requires certain Fedwire Funds Service participants with significant transaction value and volume to participate in at least two of these business resumption tests per year, at least one of which must be conducted from the participants' backup processing sites. During the contingency tests, participants test their ability to reconcile and resume transaction processing following a Fedwire Funds Service application recovery event. FRFS coordinates the schedule of these business resumption tests so they may occur when other FMI's are conducting similar contingency tests. In addition, FRFS requires certain participants accessing the Fedwire Funds Service through the FedLine Direct solution to establish a separate and diverse FedLine Advantage connection as a backup and test the import/export feature in the FedPayments Manager-Funds application annually.

Furthermore, FRFS regularly tests its full cross-site processing redundancy, including by rotating wholesale service operations between the primary data centers for production processing multiple times a year. FRFS also coordinates and participates in tabletop exercises to test resiliency procedures. Such tests help FRFS identify risks the Fedwire Funds Service faces and poses to others under these scenarios, and FRFS uses that knowledge to help it improve Service resiliency.

Finally, the Reserve Banks have taken a number of steps to minimize the likelihood that an event at one of their locations will affect the operation of the Fedwire Funds Service. For example, Reserve Banks routinely test their own physical security, evacuation and emergency notification plans, smoke-detection systems fire extinguishers, and uninterruptible power supplies. They also have in place procedures to mitigate the impact of an event that results in a reduction of on-premise staff across multiple locations.¹²⁶ FRFS has the technology and personnel capability to support normal business operations primarily through staff telecommuting arrangements.

Other Measures

FRFS has developed procedures to position the Reserve Banks to process at least some Fedwire Funds Service transactions in the event of a protracted disruption of the Service. The procedures are tailored to those transactions that, if not processed by the Fedwire Funds Service, will directly or indirectly result in a participant failing to meet its obligations at other critical financial market infrastructures.

17.7 An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.

Risks to the FMI's Own Operations

As discussed in Principle 3, *Framework for the comprehensive management of risks*, FRFS identifies and evaluates the material risks that the Fedwire Funds Service bears from other entities, including its key participants, other FMIs, and service and utility providers and acts to manage those risks. Among those risks, the Fedwire Funds Service faces operational risk from its multiple Reserve Bank and third-party service providers, including utilities such as electricity and telecommunications network suppliers. As a result, FRFS closely monitors and actively manages these service providers.

As discussed in Principle 2, *Governance*, National IT, which operates the critical computing environment in which the Fedwire Funds Service operates is a critical service provider. Under agreements between all 12 Reserve Banks, the Richmond Reserve Bank manages operational risks associated with the services they provide through National IT, including identifying security, resiliency, and contingency risks related to those services, as well as proposing and implementing appropriate mitigation of those risks in cooperation with the other Reserve Banks. Like all Reserve Banks, the Richmond Reserve Bank is subject to SAFR,¹²⁷ and FRFS requires the Richmond Reserve Bank to disclose vulnerabilities identified through the SAFR program that might affect the Fedwire Funds Service, as well as plans to remediate those vulnerabilities.

Beyond this Reserve Bank service provider, the Fedwire Funds Service is also reliant on certain critical external service providers, such as telecommunications companies, to ensure reliable connectivity to the Service for participants. To address risks from this dependency, FRFS has

¹²⁶ As an example, additional staff were trained on critical business activities during the COVID-19 pandemic to ensure staffing coverage.

¹²⁷ For more detail on SAFR, see section 17.5.

taken steps to diversify the telecommunications network used by the Fedwire Funds Service. FRFS routinely tests connections to that network.

The Fedwire Funds Service does not face material operational risk from other FMIs or from its participants. In partnership with National IT, FRFS monitors, plans, and tests capacity of the electronic connections customers use to access the Service.¹²⁸ FRFS analyzes customer transaction volume to determine capacity.

FRFS analyzes key participant activity, with a focus on participants that collectively generate the majority of Fedwire Funds Service transactions, based on transaction volume and value, to determine an appropriate business resumption test model. FRFS employs a testing protocol that allows for a simulated disruption of the production processing environment, with the subsequent activation of a backup data center. This structure provides an opportunity for certain participants with significant transaction value and volume to validate their ability to establish connectivity with the backup data center, reconcile their message traffic, and resume normal processing. As discussed in section 17.6, certain Fedwire Funds Service customers are required to participate in at least two scheduled business resumption tests per year. Each test is designed to demonstrate the ability of the Service and its customers to resume processing in the event of a disruption to production processing at one of the data centers. Service participants that play a significant role in critical financial markets or are core clearing and settlement organizations are expected to adopt the practices outlined in the *Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System*, which was adopted in the wake of the September 11, 2001, terrorist attacks.¹²⁹ The interagency paper aimed to strengthen the overall resilience of the U.S. financial system in the event of a widespread disruption by restating three key, broadly agreed-upon business continuity objectives for all financial firms and by outlining four sound practices that are designed to minimize the immediate systemic effects of a widespread disruption on critical financial markets.¹³⁰

Risks Posed to Other FMIs

The Reserve Banks recognize that the wholesale services, including the Fedwire Funds Service, are vital to the stability of the broader financial industry and, accordingly, pose material risk to other entities, including other FMIs. As a result, as described in Principle 3, *Framework for the comprehensive management of risks*, and in section 17.6, the Fedwire Funds Service is designed for high availability and resiliency. FRFS regularly reviews the risk the Service poses to other entities and considers enhancements to mitigate that risk. This includes not only identifying and evaluating scenarios in which the Service may not be available to provide critical services but also considering alternative means, such as manual processing, for meeting the

¹²⁸ For more detail on the evaluation of operational risks posed by tiered participation, see Principle 19, *Tiered participation arrangements*.

¹²⁹ See Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System, *supra* note 134.

¹³⁰ See *id.* at 1-2. The interagency paper specifies the same three business-continuity objectives outlined in section 17.6. The four sound practices in the paper are the following: (1) the identification of clearing and settlement activities in support of critical financial markets; (2) the determination of appropriate recovery and resumption objectives for such activities; (3) the maintenance of sufficient geographically dispersed resources to meet recovery and resumption objectives; and (4) the routine use or test of recovery and resumption arrangements.

needs of other Service participants under these scenarios, including contingency arrangements with other FMIs.

As stated in section 17.6, FRFS has a business continuity plan that is designed to help ensure continuous operation and availability of the Fedwire Funds Service through various scenarios, as well as rapid recovery and timely resumption of operations if operations of the Service are nevertheless disrupted. The plan addresses disruptions from a variety of causes, including widespread disruptions to telecommunications, transportation, electric power, and other critical infrastructure in the geographic regions where the FRFS operational and technical teams supporting the Fedwire Funds Service are located. FRFS routinely tests the business resiliency of the Service through regular business resumption testing, inclusive of rapid recovery from a cyber event. The capacity of the Service's suite of applications, as well as its electronic access solutions, are monitored and tested regularly by FRFS and National IT.

FRFS continues to strengthen the resiliency profile of the wholesale services, including the Fedwire Funds Service, through ongoing modernization of core applications that support the wholesale services and through ongoing resiliency initiatives.

Principle 18: Access and participation requirements

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

18.1 An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.

Because the Fedwire Funds Service is a central bank–operated payments system, U.S. law and central bank policies govern the classes of entities that are eligible to access it. U.S. law limits the customer base Reserve Banks may serve principally to depository institutions. The PFMI recognize limitations like this and note that central bank–operated systems may exclude certain categories of institutions because of legislative constraints.¹³¹ In revising part I of the PSR policy to incorporate the risk management and transparency standards in the PFMI, the Board of Governors also recognized that the application of this principle to the Fedwire Funds Service might require flexibility.¹³²

The Reserve Banks are authorized under U.S. law to provide the Fedwire Funds Service to the following entities:

- Depository institutions, as defined in section 19(b)(1)(A) of the Federal Reserve Act;¹³³
- U.S. agencies and branches of foreign banks, as defined in section 1(b) of the International Banking Act of 1978;¹³⁴
- Member banks, as defined in section 1 of the Federal Reserve Act;¹³⁵
- Treasury and other entities specifically authorized by federal statute to use the Reserve Banks as fiscal agents or depositories;¹³⁶
- Entities designated by the Secretary of the Treasury in accordance with section 15 of the Federal Reserve Act;¹³⁷
- Edge Act corporations authorized under section 25A¹³⁸ of the Federal Reserve Act and corporations that have entered into an agreement with the Board to limit their activities to those of Edge Act corporations under section 25A of the Federal Reserve Act¹³⁹ and Regulation K of the Board of Governors;¹⁴⁰
- Foreign banks, foreign monetary authorities, foreign governments, and certain international organizations, subject to the approval of the Board of Governors; and

¹³¹ Principles for Financial Market Infrastructures, *supra* note 2, n.144.

¹³² See PSR policy, *supra* note 4, n.19.

¹³³ 12 USC § 461(b)(1)(A).

¹³⁴ 12 USC §§ 3101(1), 3101(3).

¹³⁵ 12 USC § 221.

¹³⁶ See, e.g., 12 USC § 393 (Farm Credit System); 12 USC § 1435 (Federal Home Loan Banks); 12 USC § 1441(h)(2) (Financing Corporation); 12 USC § 1441b(h)(2) (Resolution Funding Corporation); 12 USC § 1723a(g) (Government National Mortgage Association and Federal National Mortgage Association); 12 USC § 1452(d) (Federal Home Loan Mortgage Corporation); 12 USC § 2279aa-3(d) (Federal Agricultural Mortgage Corporation).

¹³⁷ 12 USC § 391.

¹³⁸ 12 USC §§ 611-614.

¹³⁹ 12 USC §§ 611, 601 (*third*).

¹⁴⁰ 12 CFR § 211.5(g)

- Designated financial market utilities authorized under Regulation HH of the Board of Governors.¹⁴¹

Entities that are not eligible for direct access to the Fedwire Funds Service may access the Service indirectly as customers of direct Service participants. The Service does not place any restrictions on such indirect access. For more detail on indirect participation, see Principle 19, *Tiered participation arrangements*.

18.2 An FMI’s participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI’s specific risks and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavor to set requirements that have the least-restrictive impact on access that circumstances permit.

The Reserve Banks seek to provide broad access to the Fedwire Funds Service to legally eligible entities, but the Reserve Banks must do so in accordance with Federal Reserve risk management policies. Participants’ ARBs, not the Fedwire Funds Service itself, make risk management decisions under these Federal Reserve risk management policies. At the time an institution requests access to a master account or financial services, the institution’s ARB evaluates the risk posed by the institution under the principles of the Board of Governors’ Guidelines for Evaluating Account and Services Requests (Account Access Guidelines).¹⁴² Among other things, the institution’s ARB reviews the institution’s legal eligibility, and initiates or updates its assessment of the credit risk posed by the institution. The ARB may apply risk controls that will affect how the institution uses Reserve Bank accounts and services, if appropriate.¹⁴³ As a general matter, each ARB imposes similar risk controls on institutions that have similar risk profiles, and each ARB seeks to impose controls that are no more restrictive than necessary to manage the risks posed by that particular institution. The actions that an ARB might take to address the risks posed by particular institutions (including institutions that are Service participants) are addressed in the Account Access Guidelines, Reserve Bank operating circulars and in part II of the PSR policy. For more detail on how the Reserve Banks manage risk, see Principle 4, *Credit risk*, Principle 5, *Collateral*, and Principle 7, *Liquidity risk*.

18.3 An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.

As mentioned above, risk management decisions are made by ARBs and not by the Reserve Banks as operator of the Fedwire Funds Service. The ARB monitors the risks posed by participants on an ongoing basis as recognized in the Account Access Guidelines. Among other activities, each ARB performs ongoing surveillance and reviews the credit risk that its account holders pose to it (or another Reserve Bank) at least quarterly to ensure appropriate risk controls are applied. If necessary, the ARB will implement or adjust risk controls at the time

¹⁴¹ 12 CFR § 234

¹⁴² Board of Governors of the Federal Reserve System, Guidelines for Evaluating Account and Services Requests, 87 Fed. Reg. 51099 (Aug. 19, 2022).

¹⁴³ For example, the ARB may require customers that engage in certain transactions to maintain collateral or adequate balances with a Reserve Bank in an amount the ARB determines.

of those reviews or more frequently if it believes that it faces excessive risk exposure (e.g., if the account holder's financial condition is deteriorating).¹⁴⁴

The Account Access Guidelines recognize that a Reserve Bank may take remedial action to restrict or terminate a participant's access to the Fedwire Funds Service under certain circumstances, including if the participant is no longer eligible, if the participant poses undue risk to the Reserve Bank maintaining its master account, or if the participant materially or persistently violates the rules, policies, or procedures applicable to the Service. For more detail on the remedial actions a Reserve Bank may take, see Operating Circular 1, Operating Circular 6, Regulation J, part II of the PSR policy, and Principle 4, *Credit risk*.

¹⁴⁴ For information on the Reserve Bank's expectations for firms in resolution see The Federal Reserve Bank's Response as an Operator of the Fedwire® Funds Service to the FSB Survey on Continuity of Access to FMIS for Firms in Resolution, *available at* <https://www.frbservices.org/binaries/content/assets/crsocms/financial-services/wires/fedwire-funds-response-to-fsb-survey.pdf>.

Principle 19: Tiered participation arrangements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

19.1 An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.

On behalf of the 12 Reserve Banks that operate the Fedwire Funds Service, FRFS evaluated the operational, credit, and liquidity risks posed by tiered participation in the Service and concluded that indirect participants do not pose material risks to the Service that cannot be addressed through managing those same risks that arise from direct participants.

Consequently, the Reserve Banks have not put in place rules, procedures, or agreements to gather information to identify, monitor, and manage specific risks to the Service posed by indirect participants. FRFS has procedures in place to review its assessment of the risks posed to the Service from tiered participation at least biennially or more frequently if the Service or the environment in which it operates changes significantly.

19.2 An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.

As noted in section 19.1, the Reserve Banks do not routinely gather information that might assist them in identifying material dependencies between direct and indirect participants in the Fedwire Funds Service. Nevertheless, the Reserve Banks believe that the measures they have taken to address material risks posed to the Service by direct participants are sufficient to address any risks that might arise from indirect participants.

19.3 An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.

Evaluation of Operational Risks Posed by Tiered Participation

To begin its analysis of potential operational risks posed by tiered participation in the Fedwire Funds Service, FRFS examined whether such tiered participation could result in spikes in transaction volume, which might overwhelm the processing capacity of the Service or supporting applications. Direct participants of the Service send Fedwire funds transfers for their own purposes or on behalf of their customers (i.e., indirect participants). If an indirect participant started sending Fedwire funds transfers through a different Service participant or if it became a direct participant itself, such a change would not necessarily increase overall Service transaction volume. The volume would only increase to the extent that such a change shifted either (i) funds transfers currently effected on the books of a direct Service participant (i.e., so-called “book transfers”) to transfers effected by the Reserve Banks over the Fedwire Funds Service or (ii) funds transfers currently sent over another funds-transfer system to the Service.

FRFS analyzed different scenarios in which changes made by indirect participants could result in significant volume shifting to the Fedwire Funds Service that would exceed processing capacity and thus pose operational risk to the Service. FRFS also assessed the impact on the electronic access solutions used by Service customers if changes made by indirect participants caused an increase in volume being sent over a specific access solution. Based on this analysis, FRFS concluded that the probability of substantial volume increases emanating from the shift of the type of volume described above was low, and, even if there were significant increases in volume, both the Service and the electronic access solutions would have sufficient capacity to handle the volume.

FRFS also considered the impact on the Fedwire Funds Service from a cybersecurity incident originating at an indirect participant and concluded that the likelihood of a cyber-event originating from an indirect participant posing material risk to the Service is low.

The Reserve Banks require Service participants to implement certain security measures, which include the following:

- security protocols embedded in the hardware and software associated with the equipment used to initiate, transmit, and receive payment orders;
- access controls that grant access to the Fedwire Funds Service, such as identification codes, confidential passwords, and digital certificates; and
- encryption of payment orders during the transmission process over a private network or virtual private network.

In addition, each Fedwire Funds Service participant that sends or receives payment orders electronically must implement its own physical and logical security, as well as management controls, that appropriately protect the hardware, software, and access controls used in the funds transfer process from unauthorized access and use. Fedwire Funds Service senders must also have controls in place to ensure that initiation of a payment order occurs from locations it has authorized and requires action by more than one of its employees. Operating Circular 5, *Electronic Access*, sets forth the information security and access control requirements applicable to Fedwire Funds Service participants and their service providers that use the Reserve Banks' electronic access solutions, including procedures and processes requiring immediate notification to the Reserve Banks of any suspected, threatened, or known security breach.¹⁴⁵

Because indirect participants do not have a direct electronic connection to the Fedwire Funds Service, the likelihood that a cyber event originating from an indirect participant would pose material risk to the Service is no greater than the likelihood of a direct participant. The Reserve Banks continue to enhance their cyber response capabilities and protocols with respect to cyber incidents targeting Fedwire Funds Service participants. This includes improving communication and coordination across the Federal Reserve System and conducting a variety of preparedness exercises such as cyber scenario walkthroughs and tabletops to exercise potential actions across Reserve Bank financial services.

Finally, the overwhelming majority of Fedwire Funds Service participants are supervised financial institutions that follow the FFIEC guidance on cybersecurity¹⁴⁶. This helps ensure that

¹⁴⁵ Operating Circular 5, *supra* note 71, app. A.

¹⁴⁶ See FFIEC Cybersecurity Awareness available at <https://www.ffiec.gov/cybersecurity.htm>.

direct Fedwire Funds Service participants have taken steps to protect the security of their connections with their customers (indirect participants).

The robustness of the Reserve Banks' security procedures is assessed periodically.

Evaluation of Credit and Liquidity Risks Posed by Tiered Participation

Each Reserve Bank manages credit risk posed by its customers across all Reserve Bank financial services, not just the Fedwire Funds Service. By policy of the Board of Governors, credit risk management must be handled by Reserve Bank employees that are separate from the employees that provide Reserve Bank financial services, such as the Fedwire Funds Service.¹⁴⁷ The discussion below, therefore, considers how the Reserve Banks address credit exposure posed by indirect participants through their credit risk management functions (rather than the Fedwire Funds Service). The risk of loss to a Reserve Bank includes a situation in which the failure of a direct participant's customer (i.e., indirect participant) causes the direct participant to default or causes liquidity problems for other direct participants that are anticipating payments from the defaulted direct participant. In such a scenario, a Reserve Bank would bear greater credit risk if a Service participant were unable to cover an overdraft in its master account or otherwise meet its obligations to the Reserve Bank as expected. The Reserve Banks have policies in place to manage and mitigate these risks, however. Specifically, the Board of Governors has issued the PSR policy, which is binding on Reserve Banks. The PSR policy recognizes that the Reserve Banks have an important role in fostering the smooth functioning of payment and settlement systems by providing intraday liquidity to depository institutions. At the same time, the PSR policy seeks to control the risks assumed by the Reserve Banks in providing that intraday credit.

Part II of the PSR policy governs the provision of intraday credit (or daylight overdrafts) by Reserve Banks to their account holders, including direct Fedwire Funds Service participants. A depository institution applying for intraday credit through the self-assessment process must evaluate its intraday funds-management procedures and its procedures for evaluating the financial condition of and establishing intraday credit limits for its customers in order to determine if it is able to fund its positions in each payment or settlement system in which it participates even if a major customer defaults.¹⁴⁸ For more detail on how the Reserve Banks manage credit risk on an ongoing basis, see Principle 4, *Credit risk*.

Although the Reserve Banks do not generally collect information about indirect participants from direct Fedwire Funds Service participants, the Reserve Banks are able to leverage other information collected through the supervisory process to inform their condition monitoring and credit risk management of certain Reserve Bank customers, including certain direct Service participants.¹⁴⁹ The Reserve Bank employees who monitor and make credit decisions are not

¹⁴⁷ See Standards Related to Priced-Service Activities of the Federal Reserve Banks, *supra* note 23, at 9–1570.

¹⁴⁸ The Board of Governors' website contains additional information on the self-assessment process. See Board of Governors of the Federal Reserve System, Guide to the Federal Reserve's Payment System Risk Policy on Intraday Credit (effective July 20, 2023), available at http://www.federalreserve.gov/paymentsystems/files/psr_guide.pdf.

¹⁴⁹ In certain instances, Reserve Banks may not have access to supervisory information for particular Reserve Bank customers. In that case, Reserve Banks would evaluate the financial and market information they have available in order to formulate a credit opinion of the customer in question.

the employees charged with running the Service; credit information is not permitted to be shared with the FRFS and other Reserve Bank employees responsible for providing financial services absent extraordinary circumstances. Nevertheless, such information helps the ARB understand the materiality of any single counterparty to a particular supervised Reserve Bank customer (including Service participants) and the importance of that Reserve Bank customer to indirect participants that are supervised.¹⁵⁰

Moreover, indirect participation in the Fedwire Funds Service does not appear to present incremental credit risk to Service participants at large; only the direct Service participant that has the relationship with the indirect participant would be immediately affected. A default by either a direct Service participant or an indirect participant would not affect the finality of the settlement of payment orders processed through the Service. Defaults by sending Service participants would not affect receiving participants because credits to receiving participants' master accounts are final at the earlier of when they are made, or when advices of credit are sent by the Reserve Banks. Moreover, because the Reserve Banks are not subject to liquidity constraints, they would be able to meet their payment obligations to all receiving participants even if one or more sending participants should fail. This would be true even if the direct participant default stemmed from a default by an indirect participant and even in periods marked by liquidity-related market stress events. For more detail on the Reserve Banks' ability to meet their obligations following a direct participant's default, see Principle 13, *Participant-default rules and procedures*.

Evaluation of Legal Risks Posed by Tiered Participation

Regulation J dictates that, in connection with handling payment orders sent through the Fedwire Funds Service, the Reserve Banks may not be liable for damages except those payable under Article 4A, which limits Reserve Bank liability to only direct Fedwire Funds Service participants, except in limited circumstances. The limited circumstances in which a Reserve Bank may be liable to an indirect participant are those in which a Reserve Bank executes a payment order late or improperly. In such cases, Article 4A limits damages payable to the Reserve Banks' indirect participants to interest and, in some circumstances, incidental expenses incurred in connection with late or improper execution of the payment order.¹⁵¹ Under Article 4A, consequential damages are not recoverable for these errors by any party unless a receiving bank expressly agrees to be liable for them.¹⁵² Under Regulation J, the Reserve Banks are not permitted to agree to be liable for these consequential damages.¹⁵³

Although Operating Circular 6 is binding on indirect participants in some circumstances, the only obligations Reserve Banks have under Operating Circular 6 are those owed to direct Fedwire Funds Service participants.¹⁵⁴ This approach is consistent with the intent of Article 4A, which is

¹⁵⁰ As stated in footnote 67, the ARB generally oversees the administration of Federal Reserve credit, reserves, and risk management policies for a financial institution's operations nationwide.

¹⁵¹ UCC § 4A-305(a)-(c).

¹⁵² UCC § 4A-305(c)-(d).

¹⁵³ 12 CFR § 210.32(a).

¹⁵⁴ Operating Circular 6 is applicable to indirect participants to the same extent as Regulation J, which is applicable to indirect participants to the same extent that a funds-transfer system rule is under Article 4A. 12 CFR § 210.25(b)(2)(v).

to provide the foundation for funds transfers primarily by allocating rights and obligations between parties to a funds transfer that are in contractual privity.

For more detail on the legal framework of the Fedwire Funds Service, see Principle 1, *Legal basis*.

19.4 An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

FRFS has procedures in place to review its assessment of the risks posed to the Service from tiered participation at least biennially.

Principle 20: FMI links

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

This principle is not applicable to the Fedwire Funds Service.

Principle 21: Efficiency and effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

21.1 An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.

The Reserve Banks provide the Fedwire Funds Service in accordance with guidelines established by the Board of Governors on the provision of Reserve Bank financial services and pricing, including those set out in the *Federal Reserve System Guidelines for the Provision of Financial Services*. Under those guidelines, the Reserve Banks are expected to (i) maintain an operational presence in the provision of financial services where that presence, as a result of cost advantages, would contribute to economic efficiency or where other public-interest considerations might dictate; (ii) be prepared to remove themselves from the provision of those services that the private sector can supply more efficiently, unless there are overriding public-interest reasons for the Reserve Banks to continue offering such services; (iii) maintain the flexibility to change existing services or to offer new ones to meet specialized or evolving needs of financial institutions and the public; (iv) ascertain the needs of financial institutions and the public in order to enhance their service offerings; (v) encourage innovation across financial services; and (vi) provide full information to financial institutions about the nature and scope of the services they offer.¹⁵⁵ To meet these expectations, the Reserve Banks designed and operate the Fedwire Funds Service to efficiently and effectively meet its participants' needs by providing a high-quality and practical funds transfer service.

User Consultations on Products and Services

FRFS is responsible for the day-to-day management of the Fedwire Funds Service. FRFS actively seeks participant feedback and assesses market needs through various user consultation channels when it considers enhancements to aspects of the existing Fedwire Funds Service or the development of new products or services for the Service.

External Stakeholders

FRFS sponsors the Wholesale Payments Advisory Group (WPAG) to provide a mechanism for ongoing communication and collaboration between FRFS and a representative sample of depository institutions that are major users of the Service. The WPAG is chaired by the FRFS officer in charge of the Fedwire Funds Service. It typically meets four times a year and serves as a forum that enables FRFS and Service participants to discuss ongoing operation and use of the Service, future service enhancements, needs for market standards (e.g., market conventions for using the Service), and relevant legal or regulatory developments.

FRBNY sponsors the Payments Risk Committee (PRC). The PRC's objectives are to (1) foster enhancements to the safety and efficiency of financial market infrastructure in the United States, including by identifying opportunities to strengthen the clearing and settlement of financial transactions and (2) keep the Federal Reserve informed about developments, conditions and

¹⁵⁵ See Federal Reserve System Guidelines for the Provision of Financial Services, *supra* note 47, at 9–1573.

practices in payments, clearing, and settlement activities. Both the WPAG and the PRC provide a forum for FRFS to disseminate information to, and collect information from, key Fedwire Funds Service participants during a major contingency event.

FRFS seek to improve the efficiency and effectiveness of the Fedwire Funds Service by periodically seeking input on specific topics by interviewing and surveying customers, and by meeting with customers or industry trade groups in other forums besides the WPAG. FRFS leverages feedback from these external sources to assess Fedwire Funds Service participants' business needs and demand for new features and services and to help ensure it remains well informed, more generally, of the business environment and industry trends that may affect the Fedwire Funds Service.

In addition to the informal and user-group consultation processes outlined above, the Board of Governors uses appropriate procedures to obtain information and analysis from the public regarding proposed rules, regulations, policies, and changes to the Fedwire Funds Service that would have a significant longer-run effect on the nation's payments system.¹⁵⁶ Promulgation of Board rules is subject to the public notice and comment provisions of the Administrative Procedure Act. Generally, the Administrative Procedure Act requires that each federal agency provide notice to the public of a proposed rulemaking and an opportunity for the public to comment on the proposed rulemaking before it becomes effective. The notice of a proposed rulemaking must be published in the Federal Register. In addition, the Board of Governors may seek public comment on certain policy issues that are not necessarily rules under the Administrative Procedure Act.

Internal Stakeholders

FRFS also works with a number of Federal Reserve bodies to review the performance of the Fedwire Funds Service. This includes regular reporting to the PC, as well as regular feedback from other Federal Reserve System stakeholders including the Board of Governors, National IT, FRFS technical operations and testing staff responsible for monitoring the applications that run the Service, and other relevant FRFS functional areas, as well as liaisons from Reserve Banks' legal, audit, and risk functions.

Leveraging Stakeholder Input

FRFS uses the information collected through internal and external stakeholders to ensure the Fedwire Funds Service remains responsive to the needs of its participants. For example, in 2009 and 2011, based on participant feedback, the Service message format was enhanced to allow greater transparency of originator and beneficiary information for cover payments. In November 2014, the Reserve Banks modernized the technology underpinning the Service. The architecture of the modernized platform helps ensure the Service will retain the flexibility to meet current and future needs of Service customers. Since 2018, the FRFS has worked with SWIFT and Fedwire Funds Service participants to establish and refine a market practice to support the identification of SWIFT gpi payments in the Fedwire Funds Service message format.

Pricing and Cost Efficiency

¹⁵⁶ See Principles for Pricing of Federal Reserve Bank Services, *supra* note 61, at 9–1568 (principle 7).

Fedwire Funds Service fees are set and structured to meet its cost-recovery mandate while providing customers with price efficiencies through a tiered pricing based on a mix of service and volume utilization. In establishing and approving fees for the Service, the Reserve Banks and the Board of Governors adhere to the previously mentioned principles for the pricing of Reserve Bank services and the Monetary Control Act.¹⁵⁷ The Board of Governors, which considers the objectives of fostering competition, improving the efficiency of the payment system, and lowering costs of these services to society at large, has required the Reserve Banks to establish their fees for services like the Fedwire Funds Service in such a way that, over the long run, the Reserve Banks will recover all the direct and indirect costs they incur in providing the services, as well as imputed costs, including financing costs, taxes, and certain other expenses, plus a return on equity (i.e., profit) that a private business firm would have expected to earn if it had provided the services.¹⁵⁸

FRFS focuses on controlling costs and closely scrutinizes projected and actual costs as part of the annual budgeting process for the Fedwire Funds Service. Over the course of the year, FRFS actively monitors cost-recovery performance, including the underlying revenue and cost statistics, on a monthly basis against budgeted performance and leads an annual repricing exercise to determine whether changes in prices for the Service for the following year will be necessary to ensure cost-recovery over the long run.

The fee schedule for the Fedwire Funds Service aims to align revenues with the cost of providing the Service, which is characterized by high fixed costs and low marginal costs. Service participants pay per-item transaction fees for originating and receiving transfers, but the transaction fee is tiered to provide participants volume-based discounts, as well as other incentives under certain conditions. The fee schedule also includes a monthly participation fee and surcharges based on time-of-day and value thresholds. Participants that use the offline telephone service to send and receive their Service transactions are assessed a surcharge that reflects the additional cost of handling offline transfers, which require manual processing on the part of the Reserve Banks. Finally, the Reserve Banks charge connection fees to Service participants that access the Service via an electronic access solution to recover costs related to the secure communications infrastructure. Connections are priced by line speed and access solution type.

Fedwire Funds Service prices are publicly available at [FRBservices.org](https://www.frb-services.org), along with other Reserve Bank financial services prices, and prices for access solutions and à la carte services. [FRBservices.org](https://www.frb-services.org) clearly breaks down prices by service offering. Prices for Reserve Bank financial services, including those for the Fedwire Funds Service, are reevaluated on an annual basis. If circumstances warrant, the Reserve Banks may implement price changes, including for the Service, at other times (subject to approval by the Board of Governors). The Board publishes in the Federal Register and on its website a detailed disclosure relating to all price changes.¹⁵⁹ For more detail on the repricing process, see Principle 15, *General business risk*.

21.2 An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.

¹⁵⁷ See *id.* at 9–1566 to –1568.

¹⁵⁸ See, e.g., Board of Governors of the Federal Reserve System, Federal Reserve Bank Services, 87 Fed. Reg. 79310 (Dec. 27, 2022).

¹⁵⁹ See, e.g., *id.*

FRFS develops business objectives as part of its annual planning process. The business objectives represent the primary drivers of resource usage or significant strategic initiatives in the FRFS business and the Reserve Banks' annual strategic goals for the financial services they offer. Every year, FRFS seeks approval from the PC regarding FRFS business objectives. For more detail, see Principle 2, *Governance*. To inform business objectives, as a component of annual business planning processes, FRFS develops an assessment of environmental and risk factors with material importance to service delivery which must then be approved by the PC. Additionally, FRFS establishes and regularly reports to the PC performance measures, including for the Fedwire Funds Service. For more detail on the availability metrics for the Fedwire Funds Service, see section 17.3.

21.3 An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.

In addition to reporting the availability metrics described in section 17.3, FRFS regularly reports to the PC and other key stakeholders other measures, including performance against established budgets, transaction volume and value figures, service revenue generation, and the status of major initiatives and business objectives.

The efficiency and effectiveness of FRFS, including the delivery of the Fedwire Funds Service, are key components included in the PC's annual review of FRFS. On an annual basis, FRFS assesses the appropriateness of performance targets and shares any changes with the PC. Furthermore, the Reserve Banks collect feedback from Service customers on the performance of the Service in meeting their needs through the user consultations described in section 21.1.

Principle 22: Communication procedures and standards

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

22.1 An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

The Fedwire Funds Service accommodates internationally accepted communication procedures and standards. The Fedwire Funds Service is a funds-transfer system that processes funds-transfer messages between Service participants in the United States¹⁶⁰ using a proprietary format that is documented and communicated to participants. The proprietary message format contains basic messaging functions and is compatible with other formats used for funds-transfer payment and messaging systems. Thus, funds transfers sent through the Service may be routed to or from another system or jurisdiction. Specifically, participants can translate the Fedwire message format to the proprietary message format used by the CHIPS funds-transfer system operated by The Clearing House Payments Company L.L.C., as well as the SWIFT format. To conduct cross-border funds transfers, depository institutions typically translate Fedwire messages to SWIFT format.¹⁶¹ Basic functions enabled by the Fedwire Funds Service message format include, but are not limited to, bank transfers, customer transfers, balance inquiries, advices, acknowledgments, requests for reversals, and requests for information. The message format includes fields to identify parties to the funds transfer (even beyond to the Fedwire sender and receiver), to provide bank-to-bank information, and to provide originator-to-beneficiary information.

Through extensive industry engagement, the Reserve Banks developed a strategy to replace the proprietary message format for the Fedwire Funds Service with ISO 20022 payment messages.¹⁶² The Reserve Banks participate in the High-Value Payments System Plus Group and will align the ISO 20022 messages for the Fedwire Funds Service to the greatest extent possible with the industry guidelines developed by this group.¹⁶³ The Reserve Banks also participate in the ISO 20022 Payments Standards Evaluation Group to maintain awareness about changes to ISO 20022 messages.

On October 4, 2021, the Board of Governors announced a Federal Register Notice to seek input on a strategy to adopt ISO 20022 messages for the Fedwire Funds Service in a single-day implementation.¹⁶⁴ On June 27, 2022, the Board of Governors announced that the Fedwire Funds Service would adopt ISO 20022 payment messages in a single-day implementation on March 10, 2025.¹⁶⁵ To help participants prepare for the ISO 20022 migration, the Reserve

¹⁶⁰ As stated in footnote 30, there are limited exceptions in which a participant may access the Service from outside the United States.

¹⁶¹ Routing numbers, which are broadly used to identify financial institutions in the United States, can be converted to and from the global Business Identifier Code standard through a simple lookup.

¹⁶² The ISO 20022 XML messages are based on the Universal Financial Industry standard.

¹⁶³ The High-Value Payments Systems Plus Group was convened by SWIFT in early 2016 to develop a set of guidelines for ISO 20022 messages used by high-value payment systems around the world.

¹⁶⁴ <https://www.federalreserve.gov/newsevents/pressreleases/other20211004a.htm>

¹⁶⁵ <https://www.federalreserve.gov/newsevents/pressreleases/other20220627a.htm>

Banks created a dedicated website for the latest information about the ISO 20022 implementation for the Fedwire Funds Service.¹⁶⁶ Additionally, the Reserve Banks have made the ISO 20022 messages that will be adopted for the Fedwire Funds Service along with an Implementation Guide publicly available on the SWIFT MyStandards platform.¹⁶⁷

¹⁶⁶ Fedwire Funds Service ISO 20022 Implementation Center, *available at* <https://www.frbervices.org/resources/financial-services/wires/iso-20022-implementation-center.html>.

¹⁶⁷ [Usage Guidelines - Fedwire Funds Service Release 2025 \(swift.com\)](#)

Principle 23: Disclosure of rules, key procedures, and market data

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

23.1 An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.

The Reserve Banks provide Fedwire Funds Service participants with comprehensive rules and procedures and make key rules and procedures accessible to participants and the general public from the Reserve Banks' financial services website, FRBservices.org. Moreover, the Board of Governors' Regulation J, which also governs funds transfers made through the Service, is published in the Code of Federal Regulations and is accessible from the Board's website. As noted in section 1.2, the Reserve Banks and the Board of Governors take a number of steps that help ensure the rules and procedures governing the Service are clear and understandable.

23.2 An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.

The respective rights and obligations of the Reserve Banks, as operator of the Fedwire Funds Service, and of Fedwire Funds Service participants are set forth in applicable Reserve Bank operating circulars and in the statutes and regulations applicable to the Service, all of which are publicly accessible through the Internet. For more detail on the specific rights and obligations established through the legal framework applicable to the Fedwire Funds Service, see Principle 1, *Legal basis*.

Clear descriptions of the design and operations of the Fedwire Funds Service also are publicly available to participants and the general public through the Internet. In particular, an overview of the Fedwire Funds Service is available at FRBservices.org, which sets forth a description of the structure of the Service, product offerings and pricing, hours of operation, and relevant contact information. The same website provides links to instructions for customers wishing to become participants, as well as for existing participants that wish to modify the services they currently use.

When a new customer requests an electronic connection to the Fedwire Funds Service, the customer is provided additional documentation regarding the technical specifications required for connectivity. Operating Circular 5, which sets forth the rights and obligations of Reserve Bank customers with respect to electronic access to any Reserve Bank services, including the Fedwire Funds Service, also incorporates, or is supplemented by, additional documentation, including the Reserve Banks' certification practice statements and password practice statement.¹⁶⁸ Operating Circular 5 and these practice statements are available at FRBservices.org.

¹⁶⁸ The certification practice statements describe the policies and practices of the Reserve Banks' public key infrastructure with respect to the issuance, management, and usage of digital certificates and set forth the obligations of certificate users. The password practice statement describes the policies and

23.3 An FMI should provide all necessary and appropriate documentation and training to facilitate participants’ understanding of the FMI’s rules and procedures and the risks they face from participating in the FMI.

Fedwire Funds Service communication, training, and testing opportunities are designed to improve participants’ understanding of rules and procedures and risks related to participation. The Reserve Banks communicate with participants as needed regarding changes to the Fedwire Funds Service, including changes to the fee schedule for the Service.¹⁶⁹ The Reserve Banks also regularly provide Fedwire Funds Service participants with training and testing opportunities. Detailed instructions regarding training, testing, and educational opportunities can also be found at FRBservices.org.

The Reserve Banks routinely seek feedback from customers regarding the effectiveness of their communications through, for example, customer advisory group meetings and customer satisfaction surveys. For questions about the Fedwire Funds Service, participants may refer to the Contact Us page available at FRBservices.org.

If a participant does not follow applicable operating circulars or other governing rules, policies (including the PSR policy), or procedures, a Reserve Bank may take certain remedial actions to protect itself or other participants. For more detail on the remedial actions a Reserve Bank may take, see Regulation J, Operating Circular 1, Operating Circular 6, the PSR policy, and Principle 4, *Credit risk*.

23.4 An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.

The prices for using the Fedwire Funds Service are publicly available at FRBservices.org, along with prices for other Reserve Bank financial services, and prices for access solutions and à la carte services. FRBservices.org clearly breaks down prices by service offering and indicates where discounts are available (e.g., for higher transaction volumes) and where surcharges may apply (e.g., for offline funds transfers or for late-in-the-day funds transfers).¹⁷⁰

Prices for Reserve Bank financial services, including those for the Fedwire Funds Service, are reevaluated on an annual basis. Price changes typically are announced in the fourth quarter of every year before they take effect in January of the following year. If circumstances warrant, the Reserve Banks may implement price changes, including for the Service, at other times (subject to approval by the Board of Governors). The Board of Governors publishes in the Federal Register a detailed disclosure relating to all price changes.¹⁷¹ For more detail on the process of

practices of the Reserve Banks with respect to Reserve Bank–issued passwords used to access Reserve Bank applications.

¹⁶⁹ As described above, the Board of Governors also communicates with participants and the public at large regarding significant changes in Reserve Bank fees or service arrangements.

¹⁷⁰ Information about the Federal Reserve Financial Services fees is *available at* <https://www.frbservices.org/resources/fees/index.html>.

¹⁷¹ See, e.g., Board of Governors of the Federal Reserve System, Federal Reserve Bank Services, 85 Fed. Reg. 73037 (Nov. 16, 2020).

reevaluating the prices for using the Service, see Principle 15, *General business risk*, and Principle 21, *Efficiency and effectiveness*.

23.5 An FMI should complete regularly and disclose publicly responses to the CPSS-IOSCO disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.

Value and volume statistics related to the Fedwire Funds Service are available at FRBservices.org and present monthly, quarterly, and annual data.¹⁷² The Board of Governors' website presents statistics on daylight overdrafts incurred by master account holders.¹⁷³

The Reserve Banks will update this disclosure following changes to the Fedwire Funds Service or the environment in which it operates that would significantly affect the accuracy of the statements in this disclosure. At a minimum, they will review and update this disclosure every two years.

¹⁷² See Federal Reserve Banks, Fedwire Funds Service Volume and Value Statistics, *available at* <https://www.frbservices.org/resources/financial-services/wires/volume-value-stats/>.

¹⁷³ See Board of Governors of the Federal Reserve System, Payment System Risk: Daylight Overdrafts and Fees, *available at* http://www.federalreserve.gov/paymentsystems/psr_data.htm.

Principle 24: Disclosure of market data by trade repositories

A TR should provide timely and accurate data to relevant authorities and the public in line with their respective needs.

This principle is not applicable to the Fedwire Funds Service.

V. Acronyms

ARB	Administrative Reserve Bank
CCP	central counterparty
CFR	Code of Federal Regulations
CFVP	Conference of First Vice Presidents
CGA	coordinating general auditor
CHIPS	Clearing House Interbank Payments System
COGA	Conference of General Auditors
COP	Conference of Presidents
CPE	chief payments executive
CPMI	Committee on Payments and Market Infrastructures
CPSS	Committee on Payment and Settlement Systems
CSD	central securities depository
DNS	deferred net settlement
ET	Eastern Time
FFIEC	Federal Financial Institutions Examination Council
FMI	financial market infrastructure
FRBNY	Federal Reserve Bank of New York
FRFS	Federal Reserve Financial Services
GAO	U.S. Government Accountability Office
IOSCO	International Organization of Securities Commissions
ISO	International Organization for Standardization
IT	information technology
ITOC	Information Technology and Operations Committee
LVPS	large-value payment system
PC	Payments Committee

PFMI	Principles for Financial Market Infrastructures
PRC	Payments Risk Committee
PSR	payment system risk
RTGS	real-time gross settlement
SAFR	Security Assurance for the Federal Reserve
SSS	securities settlement system
SWIFT	Society for Worldwide Interbank Financial Telecommunications
TR	trade repository
UCC	Uniform Commercial Code
ULC	Uniform Law Commission
USC	United States Code
WPAG	Wholesale Payments Advisory Group

VI. List of Publicly Available Resources

General Information

Fedwire Funds Service

<https://www.frb services.org/financial-services/wires/index.html>

Operating Circulars, Policies, and Guides

Reserve Bank operating circulars

<https://www.frb services.org/resources/rules-regulations/operating-circulars.html>

Federal Reserve Policy on Payment System Risk

http://www.federalreserve.gov/paymentsystems/files/psr_policy.pdf

PSR-related policies

http://www.federalreserve.gov/paymentsystems/psr_relpolicies.htm

Federal Reserve's Key Policies for the Provision of Financial Services

http://www.federalreserve.gov/paymentsystems/pfs_policies.htm

Supervision and Oversight of Financial Market Infrastructures (Reserve Bank Systems)

http://www.federalreserve.gov/paymentsystems/over_rbsystems.htm

Federal Reserve Collateral Guidelines

<https://www.frbdiscountwindow.org/pages/collateral>

Account Management Guide

<https://www.frb services.org/assets/resources/rules-regulations/account-management-guide.pdf>

Financial Accounting Manual for Federal Reserve Banks

<http://www.federalreserve.gov/monetarypolicy/files/BSTfinaccountingmanual.pdf>

Data

Monthly, Quarterly, and Annual Fedwire Funds Service Value and Volume Statistics

<https://www.frb services.org/resources/financial-services/wires/volume-value-stats/index.html>

Other

The Federal Reserve System: Fed Explained

<https://www.federalreserve.gov/aboutthefed/the-fed-explained.htm>

CPMI-IOSCO Guidance on Cyber Resilience for Financial Market Infrastructures

<http://www.bis.org/cpmi/publ/d146.pdf>

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