The Clearing House®

Clearing House Interbank Payments System ("CHIPS®")

Self-Assessment of Compliance with Standards for Systemically Important Payment Systems

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CLEARING HOUSE
INTERBANK PAYMENTS SYSTEM
("CHIPS®")

SELF-ASSESSMENT OF COMPLIANCE WITH STANDARDS FOR SYSTEMICALLY IMPORTANT PAYMENT SYSTEMS

I. EXECUTIVE SUMMARY

The Clearing House Interbank Payments System (CHIPS®[1]) is a funds-transfer system that transmits and settles payment orders in U.S. dollars for some of the largest and most active banks in the world. On an average day, CHIPS transmits and settles over 430,000 "payment messages"[2] worth an aggregate of $1.5 trillion. It has been estimated that CHIPS carries a very high percentage of all international interbank funds transfers that are denominated in U.S. dollars. For these reasons, CHIPS has been widely regarded as a systemically important payment system, and on July 18, 2012, FSOC designated The Clearing House Payments Company L.L.C. (), which owns and operates CHIPS, as a systemically important financial market utility (SIFMU) under Title VIII of the Dodd-Frank Act on the basis of its role as the operator of CHIPS.[3] As the Board is the supervisory agency for PaymentsCo under Title VIII, PaymentsCo is subject to Regulation HH. PaymentsCo is also subject to the Board's Policy on Payment System Risk.

Since the Board amended its Policy on Payment System Risk to require systems to perform periodic self-assessments of their observance of relevant international standards for SIFMUs,[4] has performed a self-assessment every two years of how well CHIPS observes the relevant standards. This report covers the self-assessment that was conducted in the latter half of 2015.

As explained in more detail below, PaymentsCo meets all the standards that are applicable to it as a systemically important funds transfer system, including:

- a well-founded legal basis,

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[1] CHIPS® is a registered service mark of The Clearing House Payments Company L.L.C.

[2] A "payment message" is an electronic message that, when released by CHIPS to the receiving participant, instructs the receiving bank to pay or cause another bank to pay a fixed amount of money to a beneficiary. Rule 1(a)(10) of RULES GOVERNING THE CLEARING HOUSE INTERBANK PAYMENTS SYSTEM ("CHIPS Rules"). The CHIPS Rules and Administrative Procedures ("CHIPS Admin. P."), available at https://www.theclearinghouse.org/~/media/files/payco%20files/rulesgov%202013%20(3).pdf?la=en.

[3] Financial Stability Oversight Council, *2012 Annual Report* at 145.

[4] 72 Fed. Reg. 2518 (Jan. 19, 2007).

- a clear, transparent, and documented governance structure,
- a sound risk management framework,
- effective management of indirect[5] liquidity risks,
- settlement finality, and
- effective management of operational risk.

II. SUMMARY OF MAJOR CHANGES SINCE LAST SELF-ASSESSMENT

While there have been no major changes to the way in which CHIPS operates or the nature of the risks borne by or arising from CHIPS, the standards against which this self-assessment is performed have changed. In November 2014 the Board adopted final changes to Regulation HH[6] that replaced the previous international standards upon which the regulation was based. The previous international standard was a set of ten "Core Principles".[7] The current international standard is a set of twenty four principles for financial market infrastructures ("PFMI") developed by the Bank for International Settlements' Committee on Payment and Settlement Systems ("CPSS").[8] Regulation HH now includes twenty three standards for payment systems that have been designated as systemically important.[9]

In general the twenty-three Regulation HH standards encompass the original ten core principles but in many cases set forth more detail regarding what the standards require. The new Regulation HH standards also include new standards focused on risk management and tiered participation.[10] Hence, this self-assessment is materially different in form and detail than the previous self-assessment.

5 There is no liquidity risk with respect to CHIPS payments. However, as explained in the discussion of Standard VII, PaymentsCo has a robust program to manage indirect liquidity risk to its participants that may arise due to the absence or diminishing effectiveness of CHIPS' liquidity efficiency.

6 79 Fed. Reg. 65543 (Nov. 5, 2014).

7 Committee on Payment and Settlement Systems, Bank for International Settlements, Core Principles for Systemically Important Payment Systems (Jan. 2001) ("Core Principles Report") (available at http://www.bis.org/publ/cpss43.pdf).

8 Committee on Payment and Settlement Systems, Bank for International Settlements, Principles for Financial Market Infrastructures ("PFMI") (April 2012) (available at http://www.bis.org/cpmi/publ/d101a.pdf).

9 See 12 CFR § 234.3(a)(1) through (23).

10 There are other new requirements that are specific to counterparties and securities clearing, such as collateral, margin, physical deliveries, segregation and portability. These standards are not applicable to CHIPS.

III. GENERAL BACKGROUND ON THE CLEARING HOUSE AND CHIPS

The Clearing House

The Clearing House[11] was founded in 1853, and is the oldest, most innovative bank association and payments processor in the United States. Established to simplify the daily check exchanges in New York City, The Clearing House later became a pioneer in the emerging field of electronic funds transfers and continues to be a leader in the payments arena, operating in addition to CHIPS, an automated clearinghouse (ACH) known as EPN (Electronic Payments Network), and a check-image clearinghouse. PaymentsCo continues to pioneer in emerging areas of the payment system in its work to protect account credentials through tokenization[12] and to design and build a new low-value real-time payment system[13] for the United States.

CHIPS

CHIPS is a real-time system for transmitting and settling high-value U.S.-dollar payments among its participating banks. The Clearing House began operating CHIPS in 1970 to simplify and expedite interbank payments in New York City.

Backed by over 44 years of reliable operation, CHIPS serves 49 foreign and domestic banks,[14] representing 21 countries, through a network of sending and receiving devices, which range from microcomputers to large-scale mainframe computers. CHIPS participants include U.S. commercial banks and foreign banks with offices in the United States.

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[11] Originally, The New York Clearing House Association. In 1998, The Clearing House reorganized as a limited liability company under the name The New York Clearing House Association L.L.C. The name was changed to The Clearing House Association L.L.C. on June 28, 2004. CHIPS and other payment systems are operated by an affiliate, The Clearing House Payments Company L.L.C. Governance details are found in the discussion of Standard II, *infra*.
Throughout this paper, wherever it is necessary to distinguish the companies, The Clearing House Association L.L.C. is referred to as "the Association," and The Clearing House Payments Company L.L.C. is referred to as ""; otherwise, the organization is referred to as "The Clearing House."

[12] Since 2012 The Clearing House and its owner banks have been working together to create an open tokenization standard called Secure Token Exchange.

[13] This new real-time system is expected to limit the value of individual payments to between $10,000 and $25,000 and unlike CHIPS will not provide real-time, final settlement between banks. See, *The Clearing House to Undertake a Multi-Year Effort to Design and Develop a Secure, Real-Time Payment System* (available at https://www.theclearinghouse.org/press-room/in-the-news/2014/10/20141022-tch-to-develop-real-time-payments-system.)

[14] Appendix B is a list of CHIPS participants.

PaymentsCo is continually reviewing the expanding needs of the banking industry and its participants in order to match industry needs with state-of-the-art funds-transfer technology.

Payment Processing

A CHIPS participant sends a payment message to CHIPS in a structured format. The payment message includes some or all of the following information:

- Value date[15]
- Sending participant's CHIPS identification number
- Receiving participant's CHIPS identification number
- Dollar amount
- Intermediary bank[16] identification
- Beneficiary's bank[17] identification
- Beneficiary[18] identification
- Originator[19] identification
- Originator's bank[20] identification
- Instructing bank[21] identification

Other fields in the CHIPS payment message provide space for various parties to provide information to other parties to the funds transfer.

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15 The value date is always the funds-transfer business day on which the payment message is sent to CHIPS. The CHIPS funds-transfer business day begins at 9:00 P.M. eastern time of the calendar day before the business day and, unless extended, closes at 5:00 P.M. eastern time of the business day. *See* CHIPS Admin. P. No. 12.

16 Optional field, used only if the sending participant wishes to instruct the receiving participant to route the funds transfer through a bank between the receiving participant and the beneficiary's bank.

17 The bank identified in the payment message at which an account of the beneficiary is to be credited or that is otherwise to make payment to the beneficiary. *See* N.Y. U.C.C. § 4-A–103(1)(c). This field is not used if the receiving participant is the beneficiary's bank.

18 The person to be paid by the beneficiary's bank. *See id.* § 4-A–103(1)(b). This field is not used if the receiving participant is the beneficiary.

19 The sender of the first payment order in a funds transfer. *See id.* § 4-A–104(3). This field is not used if the sending participant is the originator.

20 The receiving bank to which the originator's payment order is issued if the originator is not a bank; if the originator is a bank, the originator. *See id.* § 4-A–104(4). This field is not used if the sending participant is the originator's bank.

21 The bank that issued the payment order to the sending participant. This field is used only if the sending participant received the payment order from a bank other than the originator's bank or the originator.

The payment message is sent to CHIPS through one of two communications-networks: (i) the primary network is through a multiprotocol label switching ("MPLS") network or (ii) a back-up integrated-services digital network ("ISDN"). Both of these networks use IBM WebSphere® MQ. The Clearing House offers CHIPS participants methods of authenticating and securing messages being sent between CHIPS and its participants that are commercially reasonable. Details of these security procedures are available to CHIPS participants, but are not published here for security reasons.

Upon receipt of a payment message, CHIPS will perform system syntax checks rejecting any payment message that does not pass the checks. Once these syntax checks have been completed, CHIPS will move the payment message to a queue where a computer algorithm determines whether to release the payment message. The payment message will be released if the algorithm determines that it can be released and settled within the parameters set by the CHIPS Rules.[22]

Release of a payment message obligates the sending participant to pay the amount of the payment message to the receiving participant. Settlement of this obligation takes place simultaneously with the release of the payment message by a debit to the "current position" of the sending participant and an identical credit to the current position of the receiving participant. Current position is explained below.

Prefunded Balance Account and Current Positions.
FRBNY provides a "CHIPS Prefunded Balance Account." Each day, each CHIPS participant is required to deposit a predetermined amount into the prefunded balance account (its "opening position requirement").[23] After it has paid its opening position requirement, each CHIPS participant is permitted to transfer additional funds to the prefunded balance account (its "initial supplemental position").[24] There is no limit on the amount that a participant can add as supplemental prefunding, and participants are able to add supplemental funds throughout the day until the end-of-day closing procedure begins.

CHIPS keeps separate records of each bank's (i) opening primary position[25] and any increases or decreases to the opening primary position resulting from sending or receiving payments messages (its "current primary position"[26]); (ii) initial supplemental position,[27] including any increases or decreases to the initial supplemental position

[22] *See* CHIPS Rules 2(c), 13(a).

[23] CHIPS Rule 12(b)(1)(B). A participant's opening position requirement amount is determined by a formula "reasonably designed to facilitate the [CHIPS payment message] release methodology." The opening position requirement is recalculated weekly. CHIPS Rule 12(b)(1)(A).

[24] CHIPS Rule 12(c)(1).

[25] CHIPS Rule 12(b)(1)(D).

[26] CHIPS Rule 12(b)(2).

[27] CHIPS Rule 12(c)(1).

resulting from sending or receiving payment messages and any additions to or withdrawals from the supplemental position (the initial supplemental position, including these increases and decreases, is called the "current supplemental position"[28]); and (iii) a "combined position,"[29] which is the sum of the current primary position and the current supplemental position. A participant may designate any or the entire amount it has added to its supplemental position as a "reserved supplemental position" to be used exclusively for the settlement and release of its urgent and preferred payment messages.[30]

Limits.

CHIPS controls the release of payment messages to ensure that no participant's current primary position or current supplemental position ever gets below zero ("minimum current primary position" and "minimum current supplemental position").[31] In addition, the release of payment messages is also controlled to ensure that no receiving participant accumulates so much liquidity that the system is not able to release payment messages efficiently. To this end, payment messages will not be released to a participant if the receipt of payment messages would cause the receiving participant's current primary position to exceed a multiple of its opening primary position ("maximum current primary position").[32]

Withdrawals.

No participant is permitted to withdraw any amount from the prefunded balance account in respect of its current primary position.[33] A participant may withdraw that portion of the current supplemental position that is less than or equal to the amount of supplemental transfers it made to the prefunded balance account.[34] For example, if a participant makes $1 million in supplemental transfers and sends out payment messages that are settled in whole or in part by reducing its current supplemental position by $1 million and then the participant receives payment messages that result in an increase to its current supplemental position of $2.5 million, the participant may withdraw no more than $1 million from the prefunded balance account. On the other hand, a participant that made no supplemental payments and received payment messages that result in a $2.5 million addition to its current supplemental position may

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28 CHIPS Rule 12(c)(2).

29 CHIPS Rule 12(d)(1).

30 CHIPS Rule 12(c)(3).

31 CHIPS Rule 12(e).

32 CHIPS Rule 12(e)(1). At present, the multiple is two times the opening primary position until 3:00 P.M., at which time the multiple in increased by a formula designed to maximized the flow of payment messages through CHIPS.

33 CHIPS Rule 12(f)(2).

34 CHIPS Rule 12(f)(1).

not withdraw any amount from the prefunded balance account; it may, however, send a payment message that would be settled by reducing its current supplemental position.

No participant may withdraw any amount from the prefunded balance account by sending a payment order directly to FRBNY.[35] PaymentsCo is the exclusive agent of the funding participants, and FRBNY will accept payment orders with respect to the balance in the account only from PaymentsCo.

Urgent and Preferred Payment Messages.

A participant may designate any payment message as "urgent" or "preferred."[36] CHIPS is designed to release urgent payment messages before preferred messages and to release preferred payment messages before payment messages that have not been designated as urgent or preferred payment messages ("nonpriority payment messages").[37]

Accounting.

Until CHIPS closes for the delivery of new payment messages, CHIPS keeps a separate record of each participant's current primary position and its current supplemental position. When a payment message is settled by deducting an amount from the sending participant's current primary position, the receiving participant's current primary position is increased by an identical amount; when a payment message is settled by deducting an amount from the sending participant's current supplemental position, the receiving participant's current supplemental position is increased by an identical amount.[38] CHIPS ensures that neither of these positions ever goes below zero and that the maximum limits on these positions are not breached.[39]

The sum of a participant's current primary position and its current supplemental position is its "combined position."[40] Because it is the sum of two positive numbers, the combined position cannot go below zero. When the end-of-day closing procedure commences, however, CHIPS combines the primary and supplemental positions into the combined position and stops keeping account of separate primary and supplemental positions.[41]

[35] CHIPS Rule 12(a)(4).

[36] CHIPS Rule 2(b).

[37] CHIPS Rule 13(a)(1)(B).

[38] CHIPS Rule 13(b).

[39] CHIPS Rule 13(a)(1)(A).

[40] CHIPS Rule 12(d)(2).

[41] CHIPS Rule 13(c)(1).

Treatment and Status of Unreleased Payment Messages.
Although almost all of the average 400,000 payment messages received each day are settled before CHIPS closes for the receipt of payment messages, a small number of payment messages (usually around 50 to 200[42], currently averaging 122) may remain unreleased at that time. At the close of business, CHIPS nets, sets off, and releases as many of the remaining payment messages as possible, without regard for any participant's maximum combined position (i.e., the maximum combined position restraint is removed, although the minimum combined position limit remains).[43] This process typically releases a few additional payment messages. Immediately following this procedure, CHIPS calculates a multilateral net balance for each participant based upon the remaining unreleased payment messages (usually around 70 to 120 payment messages worth an average aggregate of about $11.6 billion) without actually netting, setting off, or releasing those payment messages.[44] The resulting multilateral net balance for each participant (debit or credit) is combined with that participant's combined position (which is always zero or greater) to calculate the participant's closing position.[45] (The aggregate of these net amounts typically runs from $5 to $20 billion, or around 0.6% of the day's total volume.) Each participant then receives an administrative message from CHIPS advising it of its closing position; a negative closing position is a "closing position requirement."[46]

Each participant with a closing position requirement has 30 minutes from the time the administrative messages have been sent to send a Fedwire payment order in the amount of its closing position requirement to the prefunded balance account.[47] Once all of these funds transfers have been completed, the remaining unreleased payment messages are netted, set off, and released.[48] CHIPS then sends to each participant that has a positive closing position a Fedwire payment order in the amount of its closing position from the prefunded balance account.[49]

Although each participant with a closing position requirement is expected to send a Fedwire payment order in the amount of that requirement to the prefunded balance account, it is possible that a bank may be unable to do so in a timely manner. In that case a balance is run again using the available balances as adjusted by the addition of amounts from the participants that have paid their closing position requirements during

[42] The figures in this paragraph reflect September 2015 statistics.
[43] CHIPS Rule 13(c)(1).
[44] CHIPS Rule 13(c)(2).
[45] *Id*.
[46] *Id*.
[47] CHIPS Rule 13(c)(3).
[48] CHIPS Rule 13(c)(3)(A)(i).
[49] CHIPS Rule 13(c)(3)(A)(ii).

the final funding phase.[50] The payment messages of any participant that did not send the required Fedwire payment orders remain in the mix. This procedure allows CHIPS to release as many payment messages as possible.

Any payment messages that remain unreleased following this procedure expire, and the sending participant for each of these payment messages is notified that the payment messages have not been released.[51] Sending participants have the opportunity to redirect any unreleased payment message through other means (e.g., through Fedwire or a correspondent) before the close of the business day.

[50] CHIPS Rule 13(c)(3)(B).

[51] CHIPS Rule 13(d).

IV. SELF-ASSESSMENT AGAINST REGULATION HH STANDARDS FOR SYSTEMICALLY IMPORTANT PAYMENT SYSTEMS

LEGAL BASIS

> ***Standard I[52]:** The SIFMU has a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.*

CHIPS observes Standard I.

The laws of the State of New York and the federal laws of the United States of America provide for a comprehensive and well-established legal framework for payment orders that are sent and settled over CHIPS. In addition, the CHIPS Participant Agreement and CHIPS Rules provide CHIPS participants with a clear explanation of their legal rights and responsibilities with respect to their participation in CHIPS and the payments they make through CHIPS.

General Legal Framework

All CHIPS participants are required to execute the CHIPS Participant Agreement under which they agree to be bound by the Rules Governing the Clearing House Interbank Payments System ("CHIPS Rules")[53]. CHIPS Rule 3 provides that "[t]he rights and obligations of Participants and all other parties to a funds transfer of which a CHIPS payment message is a part, arising from the funds transfer or from these Rules, shall be governed by the laws of the State of New York."[54] The principal New York law governing funds transfers is Article 4-A of the New York Uniform Commercial Code. The

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[52] 12 CFR § 234.3(a)(1).

[53] The CHIPS Participant Agreement also contains a representation that the agreement is legally valid and binding on the participant and enforceable according to its terms. This provision must be supported by a legal opinion to that effect, which provides the assurance that the CHIPS Rules are legally binding on all participants.

[54] N.Y. U.C.C. § 4-A–507(3) (A funds-transfer system rule that provides that its choice of law is binding on some or all parties to a funds transfer "any part of which is carried out by means of the system . . . is binding on the originator, other sender, or receiving bank having notice that the funds-transfer system might be used in the funds transfer and of the choice of law by the system when the originator, other sender, or receiving bank issued or accepted the payment order. The beneficiary of a funds transfer is bound by the choice of law if, when the funds transfer is initiated, the beneficiary has notice that the funds-transfer system might be used in the funds transfer and of the choice of law by the system.")

netting provisions of the Federal Deposit Insurance Corporation Improvement Act of 1991 ("FDICIA")[55] are also relevant.

Choice of Law

New York law treats each branch or separate office of a bank as a separate bank for purposes of funds transfers.[56] Each CHIPS participant must be a U.S. depository institution or a U.S. branch or agency of a foreign bank, and if a participant uses a leased telecommunication line as its connection to CHIPS, the line must terminate at an office of the participant located in the United States.[57] Thus, for each CHIPS payment message, both the sender and the receiving bank is a U.S. bank. Under New York law:

> A funds-transfer system rule may select the law of a particular jurisdiction to govern (i) the rights and obligations between participating banks with respect to payment orders transmitted or processed through the system, or (ii) the rights and obligations of some or all parties to a funds transfer any part of which is carried out by means of the system.[58]

CHIPS Rule 3 selects New York law as applicable to funds transfers involving a CHIPS payment message. Although the New York U.C.C. provides that this choice-of-law rule is effective "whether or not that law bears a reasonable relation to the matter in issue,"[59] New York law does in fact bear a reasonable relation to matters involving CHIPS payment messages because , which the owns and operates CHIPS, is headquartered. The choice of New York law would therefore be effective under a more traditional choice-of-law analysis.

Moreover, since both the CHIPS sending and receiving participants are U.S. banks for purposes of the U.C.C., CHIPS does not provide cross-border services. Even where a participant sends a CHIPS payment message in execution of a payment order received from a foreign bank, U.S. law would generally apply to that payment order as well as to the CHIPS payment message because the receiving bank (i.e., the CHIPS sending participant) is located in the United States.[60] Accordingly, although foreign laws may be applicable to originators, beneficiaries, or other parties to a funds transfer involving a CHIPS payment message, they are not relevant to any issues regarding the rights or obligations of any CHIPS participant with respect to a CHIPS payment message and specifically do not affect the finality of CHIPS payment messages.

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[55] 12 U.S.C. §§ 4401–4407.

[56] N.Y. U.C.C. § 4-A–105(1)(b).

[57] *See* CHIPS Rules 6 and 19.

[58] N.Y. U.C.C. § 4-A–507(3).

[59] *Id.* § 4-A–507(1)(a).

[60] *See id.*

The following are additional laws relating to Standard I:

Insolvency Law

All CHIPS participants must be U.S. depository institutions or U.S. branches or agencies of foreign banks. Should one of these types of entities fail, it would be liquidated under the provisions of federal or state banking laws, or, in rare instances, under federal bankruptcy law.[61] Regardless of which liquidation regime were to govern the winding up of an insolvent CHIPS participant, there are no "zero-hour" or other laws that would automatically void previously settled CHIPS payment messages involving the failed participant. A transaction involving an insolvent person may be voided if it is found to involve a fraudulent conveyance or unlawful preference, but this finding would require the transferee to return the payment; it would not call into question the finality of a CHIPS payment message that might have been used to effect the transaction.

Dodd-Frank Act

In March 2012 the CHIPS Rules were revised to address an issue created by Section 1073 of the Dodd-Frank Act, which would have made certain CHIPS messages no longer subject to Article 4A of the New York Uniform Commercial Code. Section 1073 added new section 919 to the Electronic Fund Transfer Act ("EFT Act")[62] extending the EFT Act's coverage to any "remittance transfer," which it defined as an electronic transfer of funds initiated by a consumer in the United States to any person located in a foreign country. At the time that Section 1073 was enacted but prior to the effective date of the regulation implementing it, Section 4A–108 of the New York Uniform Commercial Code provided that Article 4-A did not apply to a funds transfer "any part of which is governed by the Electronic Fund Transfer Act of 1978 . . . as amended from time to time." As Section 1073 made funds transfers that were also remittance transfers subject to the EFT Act, such transfers were excluded by Section 4A-108 from Article 4A.

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[61] As a general rule, banks are excluded from bankruptcy. *See* 11 U.S.C. § 109(b)(2). But one CHIPS participant is a limited partnership licensed as a private banker in New York. If this bank failed, it is possible that it would be subject to bankruptcy.

[62] 15 U.S.C. § 1693*o*-1.

While The Clearing House did not believe that this revision of the EFT Act created any substantial uncertainty regarding the legal basis for CHIPS,[63] subsequent actions by The Clearing House and the State of New York have eliminated any such uncertainty.

In March 2012, CHIPS Rule 3 was amended to read in part as follows:

> (a) The rights and obligations of a Participant as Sending or Receiving Participant to a CHIPS payment message shall be governed by these Rules and by the laws of the State of New York, including Article 4-A of the New York Uniform Commercial Code, regardless of whether the payment message is part of a funds transfer that is a remittance transfer governed by section 919 of the Electronic Fund Transfer Act, 15 U.S.C. § 1693o-1.
>
> (b) The rights and obligations of all other parties to a funds transfer of which a CHIPS payment message is a part, shall be governed, to the greatest extent permitted by law, by these Rules and the law of the State of New York, including Article 4-A of the New York Uniform Commercial Code. In the case of a funds transfer that is a remittance transfer that is governed by section 919 of the Electronic Fund Transfer Act, 15 U.S.C. § 1693o-1, or a successor provision as amended from time to time, shall be governed by New York law, including Article 4A of the Uniform Commercial Code, except in the case of an inconsistency between New York law and the Electronic Fund Transfer Act, in which case the Electronic Fund Transfer Act shall govern.

In addition to changes in the CHIPS Rules, the New York legislature took action to preserve the applicability of Article 4-A to remittance transfers to the extent possible.

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[63] In the first place, only a very small percentage of CHIPS payments involve consumers, and of those, only the ones involving U.S. originators and foreign beneficiaries would be covered by section 1073. Thus the legal framework for a great majority of CHIPS payment messages would not have been affected by section 1073.

Secondly, even for those payment messages that are covered by the EFT Act, section 1073 only addresses the rights and responsibilities between a U.S. consumer originator and his or her sending bank. Section 1073 does not address the rights and obligations of banks vis-à-vis each other, as the EFT Act is silent as to these matters. In the absence of any law to the contrary, a court would likely give full effect to the CHIPS Rules regarding such matters as the finality of CHIPS payment messages and other rights and obligations of the sending and receiving participants as between those CHIPS participants. Finally, section 1073 had no effect on the effectiveness of the CHIPS Rules under the FDICIA netting provisions.

On August 17, 2012, New York enacted an amendment to section 4-A–108 that added two new subdivisions to section 4-A–108:

> (2) This Article shall apply to a funds transfer that is a remittance transfer as defined in the Electronic Fund Transfer Act (15 U.S.C. Sec. 1693o-1) as amended from time to time unless the remittance transfer is an electronic fund transfer as defined in the Electronic Fund Transfer Act (15 U.S.C. Sec. 1693a) as amended from time to time.
>
> (3) In a funds transfer to which this Article applies, in the event of an inconsistency between an applicable provision of this Article and an applicable provision of the Electronic Fund Transfer Act, the provision of the Electronic Fund Transfer Act governs to the extent of the inconsistency. [64]

With the 2012 amendments to Rule 3 and section 4A–108, it is clear that Article 4A continues to apply to all funds transfers that are processed and settled through CHIPS.

CHIPS Finality—Legal Basis

A chief benefit of CHIPS is that it allows the sending participant's obligation to the receiving participant to be paid at the same time as the payment message is released. Section 4-A–403(2) of the Uniform Commercial Code provides that, as between members of a funds-transfer system that nets obligations multilaterally among participants (as CHIPS does), "the receiving bank receives final settlement when settlement is complete in accordance with the rules of the system."

Section 4-A–403(2) provides that:

> The obligation of the sender to pay the amount of a payment order transmitted through the funds-transfer system may be satisfied, to the extent permitted by the rules of the system, by setting off and applying against the sender's obligation the right of the sender to receive payment from the receiving bank of the amount of any other payment order transmitted to the sender by the receiving bank through the funds-transfer system. The aggregate balance of obligations owed by each sender to each receiving bank in the funds-transfer system may be satisfied, to the extent permitted by the rules of the system, by setting off and applying against that balance the aggregate balance of obligations owed to the sender by other members of the system.

[64] 2012 N.Y. Laws, chap. 399 (Aug. 17, 2012).

Moreover, under section 4-A–403(1)(a), payment of a sender's obligation "occurs when the receiving bank receives final settlement of the obligation . . . through a funds-transfer system."

Under the CHIPS finality arrangement, payment messages are released either individually or in batches. If a payment message is released individually, it is simultaneously settled and the sending participant's obligation is paid by decreasing the current position of the sending participant and increasing the current position of the receiving participant in the amount of the payment message. These increases and decreases to the current positions of the sending and receiving participants are transfers of value and constitute settlement through a funds-transfer system that is immediately final and authorized by section 4-A–403(1)(a).

If payment messages are released in a batch, each payment message is settled by netting the sending and receiving participants' obligations to one another, and, if more than two participants have payment messages in the batch, by also netting the bilateral net balances of all participants in the same batch. Each participant's balance that results from the netting (whether it is a bilateral net balance or a multilateral net balance) is simultaneously settled by increasing or decreasing the current positions of the participants that have payment messages in the batch in the amounts of the payment messages in the batch. When this is done, settlement of those payment messages is complete in accordance with CHIPS Rule 13. This netting and adjustment of current positions also results in the transfer of value and constitutes final settlement and payment under sections 4-A–403(2) and 4-A–403(1)(a).

Because CHIPS payment messages may be released in a bilateral or multilateral batch, they are also covered by sections 403 and 404 of FDICIA. Section 403(a) provides that:

> Notwithstanding any other provision of law, the covered contractual payment obligations and the covered contractual payment entitlements between any 2 financial institutions shall be netted in accordance with, and subject to the conditions of, the terms of the applicable netting contract.[65]

Similarly, section 404(a) provides that:

> Notwithstanding any other provision of law, the covered contractual payment obligations and covered contractual payment entitlements of a

[65] 12 U.S.C. § 4403(a). A "covered contractual payment obligation" and a "covered contractual payment entitlement" are, respectively, a financial institution's obligation to make or its right to receive payment under a netting contract, including the rules of a clearing organization. *Id*. § 4402(4), (5), and (14). The Clearing House is a clearing organization as the term is defined in § 4402(2).

> member of a clearing organization to and from all other members of a clearing organization shall be netted in accordance with and subject to the conditions of any applicable netting contract.[66]

If the CHIPS receiving participant is the beneficiary or the beneficiary's bank in the funds transfer, then the entire funds transfer, not just the CHIPS payment message, is also final upon release of the payment message to the receiving participant. Under section 4-A–406(1) of the New York Uniform Commercial Code, the originator of a funds transfer has paid the beneficiary at the time a payment order for the benefit of the beneficiary is accepted by the beneficiary's bank, and, under section 4-A–209(2)(b), the beneficiary's bank accepts the payment order when it receives payment of the entire amount of the sender's payment order. Since a CHIPS payment message is finally settled at the time it is released to the receiving participant, the receiving participant (*i.e.*, the beneficiary's bank) has received payment for purposes of section 4-A–209(2)(b), payment by the originator to the beneficiary has been completed, and the originator's obligation to pay the beneficiary has been legally discharged.[67]

If the receiving participant is not the beneficiary or the beneficiary's bank, i.e., if it is an intermediary bank that must send a payment order to another bank in order for the funds transfer to be completed, then the funds transfer will not be completed until the beneficiary's bank has accepted a payment order for the benefit of the beneficiary.[68] In these situations, the completion of the funds transfer would depend on the actions of a bank other than the CHIPS receiving participant. If a subsequent intermediary bank or the beneficiary's bank fails to accept a payment order (e.g., it rejects the payment order or is unable to accept it because it or an intermediary bank has failed), then the CHIPS receiving participant may be required to refund the amount of the payment message it has received through CHIPS.[69] This fact does not, however, affect the finality of the CHIPS payment message; the refund would be accomplished not through the reversal of the CHIPS payment message but by the receiving participant sending a payment message in the amount of the incomplete funds transfer to the sending participant of the original payment message for the benefit of the originator of the of the original funds transfer.[70]

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[66] *Id.* § 4404(a).

[67] N.Y. U.C.C. § 4-A–406(2).

[68] *See id.* § 4-A–104(1).

[69] *Id*. § 4-A–402(4), (5). This is true of any payment order that is part of an incomplete funds transfer, including a payment order sent through a real-time gross-settlement system like Fedwire® Funds Transfer System.

[70] The refund could theoretically be effected through other means, such as a book transfer or a Fedwire payment order, but this would be unlikely because making the refund through a different funds-transfer system would be confusing to the participant that sent the original payment message. CHIPS

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GOVERNANCE

> ***Standard II*[71]*:*** *The SIFMU has governance arrangements that (i) are clear, transparent, and documented; (ii) promote the safety and efficiency of the SIFMU; (iii) support the stability of the broader financial system, other relevant public interest considerations, and the legitimate interests of relevant stakeholders.*[72]

CHIPS observes Standard II.

The principal governance arrangements for CHIPS are documented in the limited liability company agreement of PaymentsCo (the "LLC Agreement"), the bylaws of PaymentsCo (the "Bylaws"), and the CHIPS business committee charter. Consistent with the roles and responsibilities set forth in these documents, the Supervisory Board of PaymentsCo, the Managing Board of PaymentsCo, the CHIPS business committee, and the executives, officers, and management of PaymentsCo each carry out their respective governance functions to ensure the safety and efficiency of CHIPS and the stability of the broader financial system.

Legal Structure and Ownership

PaymentsCo is a Delaware limited liability company, formed in 2004 as part of a reorganization that brought all of The Clearing House's payments businesses (funds transfers, ACH, and check) into one integrated company. Prior to 2004 these businesses operated as separate limited liability companies.

Ownership of a limited liability company is vested in one or more "members."[73] A limited liability company may establish different classes of members,[74] and PaymentsCo has established three classes of members: Class A, Class AA, and the organizing member.[75] Each Class A member has a common membership interest equal to each other Class A member's, and each Class AA member has a common membership

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facilitates the tracking of returned payments message by mandating specific identifiers for payments messages that return payments. *See* CHIPS Admin. P. No. 3.

71 12 CFR § 234.3(a)(2).

72 Regulation HH details that a SIFMU's governance arrangements should be designed to ensure that nine specific standards are met. 12 CFR § 234.3(a)(2)(iv)(A) through (J). See Table 1*, infra,* for a complete list of these standards and how PaymentsCo satisfies the standards.

73 See *id*. §§ 18-101(11), 18-301;

74 See *id*. § 18-302.

75 A list of members is attached as Appendix A.

interest that is equal to each other Class AA member's interest and that is equal to one-fourth of the membership interest of a Class A member.[76] The organizing member is The Clearing House Association L.L.C. ("Association"), which has a one per cent common membership interest and a preferred membership interest in PaymentsCo.

Management

Management of PaymentsCo is under the direction of two boards of directors: the Supervisory Board and the Managing Board. The LLC Agreement provides that the Supervisory Board has overall responsibility for the business of PaymentsCo, while the Managing Board, which reports to the Supervisory Board, is responsible for oversight of PaymentsCo's business and financial performance and for setting PaymentsCo's strategic agenda.

Each Class A member is entitled to appoint one representative to the Supervisory Board and to the Managing Board, and the Class AA members may collectively appoint a representative to the Managing Board.[77] The Bylaws specify that each Class A member shall be represented on the Supervisory Board by its Chief Executive Officer or an equivalent officer of its top tier holding company or for those members not organized in the U.S., of its division or similar business unit responsible for its U.S. operations.[78] Managing Board representatives must be senior executives of a represented Class A member or one of its affiliates who have "sufficient knowledge, authority and influence to represent the multiple lines of business" of the member and must be able to "make decisions and commitments" on behalf of the member.[79]

The Managing Board, in turn, may appoint a business committee for each of PaymentCo's payment systems or lines of business. Each Class A and Class AA member that is a participant in a payment system may appoint to the business committee a senior officer with expertise in that payment system.[80] In addition, upon the recommendation of the business committee, the PaymentsCo chief executive officer may appoint additional members of the committee to provide participants that are not members of PaymentsCo a voice on the committee. The Managing Board has established a business committee for CHIPS.

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[76] A "membership interest" (also known as a "limited liability company interest") is a member's share of the company's profits and losses and its right to receive distributions of the company's assets. See DEL. CODE ANN. tit. 6 § 18-101(8).

[77] The Class AA members generally appoint one representative to the Board of Managing Directors for each four Class AA members, except that there is always at least one, but no more than four, Class AA representative directors on that board.

[78] §1.1 By-Laws of The Clearing House Payments Company LLC.

[79] §2.2 By-Laws of The Clearing House Payments Company LLC.

[80] §3.9 By-Laws of The Clearing House Payments Company LLC.

CHIPS is also managed and supported by executives, officers, and employees of PaymentsCo, including product, operations, technology, customer relations, risk-management, audit, and legal staff.

Roles and Responsibilities

Boards and Business Committee. As explained above, the Supervisory Board, comprised of the Chief Executive Officers of the Class A members of PaymentsCo, manages and provides direction to PaymentsCo. The Managing Board reports to the Supervisory Board and has responsibility for oversight of PaymentsCo's business, financial performance, and strategic agenda. Specifically, in addition to other authorities specified in the Bylaws, the Managing Board has the authority to (i) review and approve annual plans and operating budgets for PaymentsCo; (ii) review and assess PaymentsCo performance; (iii) review examination reports and monitor responses of thereto; (iv) establish charters for, and appoint members to committees of the Managing Board; and (v) upon request, advise the Supervisory Board as to the performance of The Clearing House's Chief Executive Officer relative to PaymentsCo matters.[81]

The CHIPS business committee, comprised of individuals appointed by the Managing Board who are experts in international wire payments, are responsible for a number of strategic, risk management, and governance matters, including:

- advising PaymentsCo management regarding CHIPS-related service levels and business initiatives, including new products, expansion of services, and acquisitions to ensure that the organization continues to provide value and meets the future needs of its users.
- ensuring that liquidity risk analysis is performed on a scheduled basis;
- approving changes to the CHIPS Rules and Administrative Procedures;
- approving the methodology used, selection of scenarios, frequency of liquidity simulations, and forums for sharing results of liquidity risk analysis;
- reviewing risk management policies and procedures used by CHIPS;
- reviewing operational performance including business continuity;
- reviewing and recommending for approval by the Board integrated plans for PaymentsCo's recovery and orderly wind-down ("Resolution and Wind-Down Plan"); and
- providing leadership and support for industry and regulatory initiatives that ensure the continued safety and soundness of the payment system.[82]

[81] §2.1 By-Laws of The Clearing House Payments Company LLC.

[82] CHIPS Business Committee Charter (2015).

Management. The Bylaws provide for PaymentsCo's Chief Executive Officer who has "general charge and supervisions of the activities of PaymentsCo," subject to the oversight of the Supervisory and Managing Boards.[83] The officers and employees of PaymentsCo are under the CEO's direction and report directly or indirectly to the CEO.[84]

The current management for CHIPS is comprised of an executive vice president who reports directly to the CEO, a senior vice president who reports to the executive vice president, and a product director who reports directly the senior vice president. The senior vice president and product director work closely with the CHIPS business committee and are responsible for organizing quarterly committee meetings and keeping the committee informed regarding the performance, operations, and commercial initiatives of CHIPS.

Other officers and staff from PaymentsCo's operations, technology, customer relations, risk-management, audit, and legal staff support also support CHIPS.

Conflicts of Interest

PaymentsCo's LLC Agreement and Bylaws include provisions that address conflicts of interest by board members and committee members.[85] In addition, PaymentsCo has a Statement of Policy Governing Conflicts of Interest that provides further detail regarding the general standards for how board and committee members should conduct their relationships with PaymentsCo, prohibited activities, and authorized activities. The statement sets forth procedures for and requires board and committee members to disclose conflicts of interest and business affiliations. The statement further specifies procedures for board or committee members to recuse themselves from decisions or discussions in which they have a conflict of interest or to disclose their conflict to the board or committee or take further action to address the conflict. The statement is distributed to all board and committee members annually.

Internal Audit

PaymentsCo's Bylaws provide for an audit committee comprised of at least five senior representatives of the audit departments from Class A members, who are appointed by the Managing Board and independent from the board.86 As provided in the committee charter, the audit committee assists the Supervisory and Managing Boards by, inter alia,

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83 §4.3 By-Laws of The Clearing House Payments Company LLC.

84 *Idem.*

85 §7.2 First Amended and Restated Limited Liability Company Agreement of the Clearing House Payments Company LLC and §6.6 By-Laws of The Clearing House Payments Company LLC.

86 §3.4 By-Laws of The Clearing House Payments Company LLC.

reviewing PaymentsCo's internal audit function and system of internal controls. The committee also considers and reviews with PaymentsCo's Chief Auditor the internal auditing department budget, succession plan, staffing and staff qualifications. The committee's chair reports to the Managing Board once each year on the effectiveness of internal controls, annual financial statements and the relationship with the independent accountants.

PaymentsCo's Chief Auditor reports to The Clearing House's Audit Committee (and to The Clearing House's chief executive officer for administrative purposes only), thereby ensuring the degree of independence essential to the effectiveness of internal auditing.

Table 1

Specific standards for SIFMU governance arrangements.

The SIFMU has governance arrangements that are designed to ensure	How PaymentsCo Satisfies
Lines of responsibility and accountability are clear and direct.[87]	CHIPS is managed by officers who report to PaymentsCo's CEO and by the CHIPS business committee that reports to the Managing Board. The CEO reports to the Managing and Supervisory Boards.
The roles and responsibilities of the board of directors and senior management are clearly specified.[88]	PaymentsCo's LLC Agreement, Bylaws, and CHIPS business committee charter clearly specify the roles and responsibilities of the Supervisory Board, Managing Board, CHIPS business committee and Chief Executive Officer.
The board consists of suitable individuals having appropriate skills to fulfill its multiple roles.[89]	The Supervisory Board is comprised of the CEOs of the Class A members of PaymentsCo. The Managing Board is comprised of senior executives of members who have sufficient knowledge, authority and influence to represent the multiple lines of business of the member.
The board includes a majority of individuals who are not executives,	Pursuant to PaymentsCo's By-Laws, directors for both the Supervisory and Managing

[87] 12 CFR § 234.3(a)(2)(iv)(A).
[88] 12 CFR § 234.3(a)(2)(iv)(B).
[89] 12 CFR § 234.3(a)(2)(iv)(C).

officers, or employees of the SIFMU.[90]	Boards are comprised entirely of individuals who are executives and officers PaymentsCo's members.
The board establishes policies and procedures to identify, address, and manage potential conflicts of interest of board members and to review the board's performance and the performance of individual members on a regular basis.[91]	PaymentsCo's LLC Agreement and By-Laws have provisions addressing board and committee member conflicts of interest. PaymentsCo also has a policy statement regarding board and committee member conflicts of interest that includes procedures for disclosing and addressing conflicts of interest. The Managing Board performs an annual self-assessment, the results of which are shared with the members of the board.
The board establishes a clear, documented risk-management framework that includes the SIFMU's risk tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision-making in crises and emergencies.[92]	The Managing Board reviews and approves PaymentsCo's Enterprise Risk Management Framework and Risk Appetite Statement on an annual basis. The framework provides a foundation for risk management that enables PaymentsCo to understand, manage, and monitor the risks associated with its business objectives by ensuring, among other things, risks are properly identified and decisions are made consistent with TCH's risk appetite. PaymentsCo's By-Laws provide for an emergency board in the event of an emergency that disrupts business activities such that two or more directors are unable to act. The emergency board is empowered to act as the Managing Board until each

[90] 12 CFR § 234.3(a)(2)(iv)(D).

[91] 12 CFR § 234.3(a)(2)(iv)(E).

[92] 12 CFR § 234.3(a)(2)(iv)(F).

	director is again able to act or a replacement director is appointed.[93]
Senior management has the appropriate experience, skills, and integrity necessary to discharge operational and risk-management responsibilities.[94]	There are three primary governance arrangements that ensure the experience, skills, and integrity necessary for senior management to carry out their operational and risk-management responsibilities: (1) the oversight of PaymentsCo's Supervisory and Managing Boards as informed by interactions with senior management and reports about PaymentsCo's performance; (2) the Chief Executive Officer's general responsibility for the affairs of PaymentsCo, including its employees, and (3) the CHIPS and Enterprise Risk Committees that regularly interact with senior managers responsible for operations and risk management.
The risk-management function has sufficient authority, resources, and independence from other operations of the SIFMU, and has a direct reporting line to and is overseen by a committee of the board of directors.[95]	PaymentsCo's risk management function has sufficient authority and resources to carry out its responsibilities and is independent from other functions of the company. The risk management function is overseen by an enterprise risk committee of the Managing Board. In addition the Chief Risk Officer attends all Managing Board meetings and provides regular updates to the board.
The internal audit function has sufficient authority, resources, and independence from management,	PaymentsCo's internal audit function has sufficient authority and resources to carry out its responsibilities. The function has a

[93] §2.11 By-Laws of The Clearing House Payments Company LLC.
[94] 12 CFR § 234.3(a)(2)(iv)(G).
[95] 12 CFR § 234.3(a)(2)(iv)(H).

and has a direct reporting line to and is overseen by a committee of the board.[96]	direct reporting line to and is overseen by an audit committee that is independent from PaymentsCo's management and the Managing Board. The committee provides oversight to PaymentsCo's internal audit function, including its authority, resources and independence. PaymentsCo's Chief Auditor has a direct reporting line to the committee. In addition the Chief Auditor attends all Managing Board meetings and provides regular updates to the board.

Major decisions of the board are clearly disclosed to relevant stakeholders, including the SIFMU's owners, participants, and participants' customers, and where there is a broad market impact, the public.[97]	Major decisions of the Managing and Supervisory Boards are known to PaymentsCo's owners through their representatives who serve on the boards. In addition, PaymentsCo has channels to communicate with its participants through the CHIPS Business Committee (for participants who are owners) and designated officers and operational contacts (for both owner and non-owner participants) in the event of a major board decision impacted CHIPS. While it is unlikely that a board decision would have broad market impact, the decision would be communicated to the general public through press release and publication on PaymentsCo's website.

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[96] 12 CFR § 234.3(a)(2)(iv)(J).

[97] 12 CFR § 234.3(a)(2)(iv)(K).

COMPREHENSIVE RISK MANAGEMENT

> ***Standard III[98]:** The SIFMU has a sound risk-management framework for comprehensively managing legal, credit, liquidity operational, general business, custody, investment, and other risks that arise in or are borne by the SIFMU. This framework is subject to periodic review.*

CHIPS observes Standard III.

PaymentsCo employs a sound, enterprise-wide risk-management framework that is approved by the Managing Board and reviewed on an annual basis. The risk-management framework provides the key components for enterprise risk identification, assessment, monitoring and reporting processes and the cross functional components necessary for an enterprise view of PaymentsCo's risk environment. This risk-management framework is applied to CHIPS to identify, monitor, and manage risks to CHIPS, CHIPS participants, and the financial system.

Table 2

Specific standards for SIFMU comprehensive risk management.

The SIFMU's sound risk-management framework includes . . .	How PaymentsCo Satisfies
Risk-management policies, procedures and processes that enable the SIFMU to identify, measure, monitor, and manage the risks that arise in or are borne by the SIFMU, including posed by other entities as a result of interdependencies.[99]	Pursuant to PaymentsCo's Enterprise Risk Management Framework, PaymentsCo identifies and measures risk arising on and borne by CHIPS through (i) an annual product risk assessment that establishes an overall risk assessment based on business, operational, technological, information security, and legal risk to CHIPS; (ii) quarterly risk assessments performed by all departments, including the CHIPS product team; and (iii) continuous self-reporting by all

[98] 12 CFR § 234.3(a)(3).

[99] 12 CFR § 234.3(a)(3)(i).

	departments of all newly identified risks. Any risks that are determined to be inconsistent with PaymentsCo's Risk Appetite must be remediated or accepted using an exception process. PaymentsCo monitors risk related to the operation of CHIPS through business metrics and key risk indicators that are continuously tracked and reported. PaymentsCo also identifies, measures, monitors, and manages risk posed by critical vendors and Fedwire, as CHIPS is dependent on these entities for its regular functioning.
Risk-management policies, procedures and processes that enable the SIFMU to identify, measure, monitor, and manage the risks that it poses to other entities, such as other financial market utilities, settlement banks, liquidity providers, or service providers, as a result of interdependencies.[100]	Pursuant to PaymentsCo's Enterprise Risk Management Framework, PaymentsCo identifies and measures risk that CHIPS poses to its participants as explained in the discussion of Standard VII (Liquidity Risk), Standard XII (Participant-Default Rules and Procedures), Standard XV (General Business Risk), and Standard XVII (Operational Risk). CHIPS poses no risk to other financial market utilities, settlement banks (other than in their capacity as CHIPS participants), liquidity providers, or service providers, as a result of interdependencies.
Integrated plans for the SIFMU's recovery and orderly wind-down.[101]	As of December 31, 2015 PaymentsCo has completed an integrated recovery and orderly wind-down plan for CHIPS that meets the requirements of Regulation HH.

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[100] 12 CFR § 234.3(a)(3)(ii).

[101] 12 CFR § 234.3(a)(3)(ii).

CREDIT RISK

Standard IV[102]: *The SIFMU effectively measures, monitors, and manages its credit exposures to participants and those arising from its payment, clearing, and settlement processes.*

Standard IV is not applicable to CHIPS.

PaymentsCo has no credit exposure to participants or arising from its payment, clearing, and settlement processes. PaymentsCo is not a party to CHIPS payment messages and, thus, has no obligation to pay any CHIPS messages. It also does not extend credit to its participants or any other parties as a part of its clearing and settlement processes. Furthermore, CHIPS participants have no credit exposure to other participants as CHIPS payment messages are (i) settled immediately upon their release and (ii) not released unless the sending participant has a sufficient position to settle the message.

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COLLATERAL

Standard V[103]: *If it requires collateral to manage its or its participants' credit exposure, the SIFMU accepts collateral with low credit, liquidity, and market risks and sets and enforces conservative limits, in order to ensure the value of collateral in the event of liquidation and that the collateral can be used in a timely manner.*

Standard V is not applicable to CHIPS.

PaymentsCo does not use collateral as there is no credit risk to PaymentsCo or its participants as a result of the clearing or settlement of CHIPS payment messages.

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[102] 12 CFR § 234.3(a)(4).

[103] 12 CFR § 234.3(a)(5).

MARGIN

***Standard VI*[104]*:** If it operates as a central counterparty, the SIFMU covers its credit exposures to its participants for all products by establishing a risk-based margin system.*

Standard VI is not applicable to CHIPS.

CHIPS is not a central counterparty and has no credit exposures.

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LIQUIDITY RISK

***Standard VII*[105]*:** The SIFMU effectively measures, monitors, and manages the liquidity risk that arises in or is borne by the SIFMU.*

CHIPS observes Standard VII with respect to the liquidity risks of its participants. However, Standard VII's provisions relating to the liquidity risk of a SIFMU are inapplicable to CHIPS.[106]

Liquidity risk is the risk that a party will have insufficient funds to meet its financial obligations as and when expected, although the party might do so in the future.[107] The financial obligations that exist in CHIPS fall into two categories. The first category is obligations that are essential to the operation of CHIPS: (i) final settlement of payments and (ii) distribution of funds from the CHIPS Prefunded Account at the end of the day to participants in a final positive position. The second category is obligations that are necessary for the efficiency and reliability of CHIPS but not essential to its operations: individual participant funding of their initial position requirement and closing position requirement (if any). As explained below, there is no liquidity risk with respect to the

[104] 12 CFR § 234.3(a)(6).

[105] 12 CFR § 234.3(a)(7).

[106] In particular, Standard VII's provisions regarding maintaining sufficient liquid resources, holding certain types of assets to meet a minimum liquid resource requirement, evaluating certain providers of liquidity arrangements, testing procedures for accessing liquid resources, validating a SIFMU's liquidity risk-management model, and establishing rules and procedures that describe a SIFMU's process for replenishing liquid assets after a stress event do not apply to CHIPS. See 12 CFR § 234.3(a)(7) (ii) through (viii).

[107] § 2.6 Principles for Financial Market Infrastructures (2012).

first category of financial obligations and with respect to the second category of financial obligations, effectively measures, monitors, and manages liquidity risk.

Beyond the financial obligations that exist in CHIPS, PaymentsCo recognizes that an event affecting CHIPS might impact CHIPS participants' intraday liquidity due to the absence or diminishing effectiveness of CHIPS' liquidity efficiency. Hence, PaymentsCo also effectively measures, monitors, and manages this indirect risk to participant intraday liquidity.

No Liquidity Risk Related to PaymentsCo

PaymentsCo neither creates nor bears any liquidity risk under either category of financial obligations. With respect to the settlement of payments, PaymentsCo is not a party to and has no financial obligations regarding CHIPS payment messages. With respect to the distribution of funds from the CHIPS account at the end of day, the funds in the account are jointly owned by CHIPS funding participants and PaymentsCo acts only as the agent for the account. With respect to the funding of opening and closing position requirements, this is an obligation of CHIPS participants, not PaymentsCo.

Liquidity Risk Related to CHIPS Participants

No liquidity risk related to financial obligations to settle payments and distribute funds at end of day. As there is no obligation for a CHIPS participant to pay a CHIPS message until it is released, at which time it is immediately settled[108], there is no risk that a CHIPS participant will not pay for its messages when payment is due. In addition, CHIPS does not allow the release of payment messages that would put a participant into a negative position. When a CHIPS message is released the sending participant must have a sufficient current primary position or current supplemental position to settle the payment message.[109] Since CHIPS participants are unable to accrue a negative position there is never a need for a participant to either receive payments or provide funding at a future point in time to cover its position in the CHIPS Prefunded Account. Lastly, as all current positions are backed dollar-for-dollar in the CHIPS Prefunded Account, there is no risk that there will be insufficient funds in the account to enable distribution of funds at the end of the day. Hence, there is no liquidity risk created or borne by CHIPS participants with respect to the first category of financial obligations that exists in CHIPS.

Effective measurement, monitoring, and management of financial obligations to fund opening and closing position requirements.

[108] CHIPS Rule 2(d).

[109] CHIPS Rule 13(a)(1).

Financial Condition of Participants. The CHIPS Rules provide that each participant "must have access to sources of credit and liquidity to enable it to pay promptly each day its opening position requirement and its closing position requirement."[110] PaymentsCo judges whether a prospective participant has the required liquidity to be a CHIPS participant, in part, through credit reports from a recognized rating agency and an evaluation of the potential participant's financial condition. With respect to current participants, PaymentsCo monitors the timeliness of participant funding, publicly available information, and, when necessary, credit reports in order to identify potential changes in financial health that may impact a participant's ability to fund its positions. PaymentsCo also utilizes an automated analytical tool to assist in identifying and analyzing anomalies PaymentsCo related to a participant's activities on CHIPS. If it appears that a participant's financial condition may prevent the participant from funding its positions, will engage its product, risk management, legal, and customer relationship groups to evaluate whether the participant presents risk to CHIPS and if so, any action that is needed to mitigate the risk.

Monitoring and Follow Up Regarding Timely Funding. PaymentsCo's operations staff closely monitors the funding of opening and closing position requirements of each participant. If a participant has not funded within a few minutes of the time it usually funds, PaymentsCo's operations staff will contact the funding participant to ask why funding has not yet been received. Generally this contact will prompt the participant to quickly fund.

In rare instances in which a participant is experiencing issues that delay its ability to fund, the contact enables PaymentsCo's operations staff to understand the nature of the issue, keep a line of communication open with the participant while the issue is being resolved, escalate the issue to PaymentsCo's product management, risk management, legal, and other internal stakeholders, and prepare for any actions may need to take if funding is going to be significantly delayed or unable to be made. After any material funding delay has occurred PaymentsCo's product and risk management staff will also contact the participant's senior management to discuss the event to confirm what caused the delay and determine whether any actions are necessary to prevent similar delays in the future.

Indirect Risk to CHIPS Participant Intraday Liquidity

The CHIPS algorithm that enables bilateral and multilateral netting makes CHIPS highly liquidity efficient. CHIPS participants realize a liquidity-efficiency ratio of 18:1, meaning that each dollar a participant provides to the CHIPS prefunded account will settle

[110] CHIPS Rule 19(a)(2).

eighteen dollars-worth of payments. By reducing the amount of funds needed to settle large value payments, CHIPS reduces liquidity risk for its participants.

Given the high liquidity efficiency of CHIPS, an interruption to its normal functioning, whether resulting from a technical issue, funding failure by a participant or other exception event may impact the intraday liquidity demands on CHIPS participants and create systemic financial risk. While PaymentsCo has been cognizant of this potential for indirect impact to CHIPS participants and has taken steps to measure, monitor, and manage the risk for many years, in 2014, PaymentsCo adopted a Systemic and Liquidity Risk Management Framework to ensure that both PaymentsCo and CHIPS participants are aware of risks that may occur in the event of a system disruption or a systemic event that disrupt payment flows through CHIPS. The framework also provides a formal structure for performing stress tests and conducting scenario analysis. The framework is approved by the CHIPS Business committee and the Managing Board receives a report on the execution of the framework on an annual basis.

Monitoring Unreleased Messages at End-of-Day. As unreleased or expired payment messages on CHIPS may create downstream credit and liquidity risks to banks expecting to receive payments, PaymentsCo monitors the amount of payment messages that remain unreleased when CHIPS begins its end-of-day processing.

In 2012, CHIPS modified CHIPS Rule 22 and Administrative Procedure 14 to provide guidelines for the amount of unreleased payment messages for the system as a whole. Under Administrative Procedure 14(b), PaymentsCo monitors the size of the aggregate closing position requirements for all CHIPS participants. If this amount exceeds one per cent of the total value of all payment messages processed on that day, PaymentsCo will ask any participant whose debit position was 10% or more of the total position requirement to provide information on the circumstances that resulted in its exceeding the guideline.

The one percent guideline is an extremely conservative measure, and by itself does not indicate high risk. PaymentsCo monitors each instance, looks for trends that could indicate an increasing risk, and addresses each situation as outlined. All instances of exceeding the one per cent guideline are reported to the CHIPS Business Committee and subject to further discussion.

Simulations. PaymentsCo has run simulations of various liquidity stress events for several years. These simulations inform both PaymentsCo and CHIPS participants' understanding of the potential effect that different exception scenarios might have on the functioning of CHIPS and individual participant's liquidity and payment operations. Currently under PaymentsCo's Systemic and Liquidity Risk Management Framework, simulations are performed each quarter based on scenarios developed in consultation with a simulation steering committee comprised of liquidity subject matter experts from member banks that are CHIPS participants. The scenarios are reviewed by the simulation steering committee and approved by the CHIPS Business Committee.

Each simulation is run against an actual day's activity and the production data from the day is used as the baseline to measure the impact of the stress event. The simulation results are presented both at a summary level to show the impact to the operations of CHIPS and at a participant level. Any simulations resulting in observed systemic and liquidity concerns are required to be immediately reported to PaymentsCo's Chief Risk Officer. Such results will also be shared with other internal stakeholders for further evaluation and analysis.

In 2014, PaymentsCo adopted guidelines for communicating the results of simulations with CHIPS participants. Consistent with those guidelines, in 2014 and 2015 each large CHIPS participant received a customized presentation of how simulated events would have impacted their CHIPS activity for the days on which the simulations were run. Beginning in 2016 all CHIPS participants will receive these customized presentations. In addition, PaymentsCo enterprise risk management staff has a detailed conversation regarding simulation results with large participants once every twelve months and smaller participants once every eighteen months.

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SETTLEMENT FINALITY

> ***Standard VIII***[111]***:*** *The SIFMU provides clear and certain final settlement intraday or in real time, as appropriate, and at a minimum, by the end of the value date. The SIFMU clearly defines the point at which settlement is final and the point after which unsettled payments, transfer instructions, or other settlement instructions may not be revoked by a participant.*

CHIPS observes Standard VIII.

CHIPS provides instantaneous finality for payment messages as they are released. CHIPS therefore provides prompt final settlement throughout the day. The legal basis for finality of CHIPS is set out in the discussion of "CHIPS Finality – Legal Basis" under Standard I.

[111] 12 CFR §234.3(a)(8).

The CHIPS Rules expressly provide that both intraday and end-of-day settlement are final upon settlement completion.[112] Further, the rules are also express that a participant can delete a stored payment message (i.e. revoke a payment instruction) at any time before CHIPS closes or before the message has been released. [113]

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MONEY SETTLEMENTS

> ***Standard IX[114]:*** *The SIFMU conducts its money settlements in central bank money where practical and available.*

CHIPS observes Standard IX.

Each CHIPS payment message is settled by deducting the amount of the payment message from the sending participant's current primary position, current supplemental position, or both and adding an identical amount of the payment message to the receiving participant's corresponding current position. The total amount of all the participants' current primary and supplemental positions is backed, dollar-for-dollar, by a balance in an account on the books of FRBNY.

Prefunded Balance Account

The CHIPS prefunded balance account is a special deposit account that FRBNY has opened on its books for the benefit of all CHIPS funding participants. As part of the agreement creating the prefunded balance account, the funding participants have designated The Clearing House as their exclusive agent with respect to the account, giving The Clearing House exclusive control over the account: no funding participant or other CHIPS participant has a separate, individual claim against FRBNY with respect to any balance in the account, and FRBNY has no obligation to pay any amount under the agreement other than the amount that is then in the account, and even then, FRBNY is to pay only in accordance with The Clearing House's instructions.[115]

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[112] *See* CHIPS Rule 13.

[113] CHIPS Rule 2(a).

[114] 12 CFR §234.3(a)(9).

[115] Letter from Jamie B. Stewart, Jr., First Vice President, Federal Reserve Bank of New York, to The Clearing House Interbank Payments Company L.L.C. (Sept. 28, 2000) ("CHIPS Prefunded Balance Account Agreement"). The Clearing House Interbank Payments Company L.L.C. merged into The Clearing House Payments Company L.L.C. on July 1, 2004.

A participant's current primary or supplemental position at any point in time represents the amount that will become due to that participant following the close of business on that day if the participant does not send or receive any additional payment messages that are settled through additions to or subtractions from its current primary or supplemental positions. That obligation is owed jointly by all of the funding participants and is payable by The Clearing House solely from the balance in the prefunded balance account. No participant has any separate, individual claim against any funding participant, The Clearing House, or FRBNY.

Under this arrangement, the current primary and supplemental positions of the participants are the media through which CHIPS payment messages are settled. Because the total amount of all participants' current positions is matched by a deposit liability of FRBNY, CHIPS observes Standard IX.

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PHYSICAL DELIVERIES
CENTRAL SECURITIES DEPOSITORIES
EXCHANGE OF VALUE SETTLEMENT SYSTEMS

Standards X, XI, and XII are not applicable to CHIPS.

CHIPS does not operate as a securities settlement system or central securities depository. It also does not settle transactions that involve the settlement of two linked obligations.

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PARTICIPANT-DEFAULT RULES AND PROCEDURES

> ***Standard XIII[116]:*** *The SIFMU has effective and clearly defined rules and procedures to manage a participant default that are designed to ensure that the SIFMU can take timely action to contain losses and liquidity pressures so that it can continue to meet its obligations. In this regard, the SIFMU tests and reviews its default procedures, including any closeout*

[116] 12 CFR §234.3(a)(13).

procedures, at least annually or following material changes to these rules and procedures.

CHIPS observes Standard XIII.

Participant default is primarily managed through CHIPS' design, operations and rules which prevent settlement default. Default is also managed through clearly defined rules and procedures that (i) prevent a participant from participating in CHIPS on any day on which it fails to fund its opening position requirement and (ii) provide for the automatic expiration of any payment messages that remain unreleased after final end-of-day release due to a participant's failure to fund its final closing position requirement.

The Principles for Financial Market Infrastructures describe default as the failure of a participant to meet its obligations.[117] Prompt funding of opening and closing position requirements is the principal obligation of a CHIPS participant.[118] However, it is important to note that a participant's failure to fund its opening or closing position requirement would not create losses as such failure would not constitute or cause a settlement default.

There can be no settlement default CHIPS because a participant does not have an obligation to pay for a payment message it sends until the message is released[119], at which time it is immediately and finally settled through a simultaneous deduction to the primary or supplemental position of the sending participant and credit to the receiving bank's current position.[120] Hence, losses through settlement default are not possible on CHIPS.

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117 Explanatory Note 3.13.1 Principles for Financial Market Infrastructures (2012).

118 CHIPS Operating Rule 19(a)(2).

119 It is also clear that, absent an agreement between the sending participant and its sender, a sending participant has no obligation to its own sender with respect to a CHIPS payment message prior to release of the payment message to the receiving participant. A CHIPS payment message is often only one part of a funds transfer that includes several payment orders, and a CHIPS sending participant is frequently an originator's bank or an intermediary bank in the funds transfer. Article 4A provides that a receiving bank becomes obligated on a payment order only upon acceptance of the order, and that a receiving bank (other than the beneficiary's bank) accepts a payment order only upon execution of the payment order, i.e., by sending a corresponding payment order to the next bank in the funds transfer. *See* N.Y. U.C.C. §§ 4-A–209, 4-A–301, 4-A–302. If a bank uses a funds-transfer system to transmit a payment order to a receiving participant, the system is the sender's agent. *See id*. § 4-A–206(1). Thus, prior to release of the payment message by CHIPS, the payment message has not been sent to the receiving participant, has not been executed or accepted by the sending participant, and may be subject to cancellation or amendment by the sending participant's sender. *See id.* § 4-A–211; *see also* CHIPS Rule 2(a).

120 *See* CHIPS Rules 2(d) and 13(b) and (c).

In the event that a CHIPS participant fails to fund its opening position requirement, CHIPS will not release any payment message sent by or to the participant.[121] Hence, the non-funding participant will not be able to participate in CHIPS clearing and settlement for the day.

In the event that a CHIPS participant fails to fund its closing position requirement, PaymentsCo will net, set off, and release as many of the remaining[122] payment messages as possible based on the available positions of participants that have fully or partially funded their closing position requirements.[123] Any payment messages that remain unreleased after this final netting, setting off, and release expire.[124] Such expiration is effective as the cancellation of the payment message by the sending participant.[125]

With regard to liquidity pressure, as discussed under Standard VII, PaymentsCo bears no liquidity risk. Thus, a participant's failure to fund its opening or closing position requirement will not prevent PaymentsCo from clearing and settling CHIPS payment messages. However, to the extent there is less funding in the CHIPS Prefunded Account, the liquidity savings of CHIPS multilateral netting may be diminished and other participants may need to provide additional supplemental funding during the day so that their payment messages will be quickly released. These potential liquidity stresses are tested through PaymentsCo's liquidity simulations so that both PaymentsCo and CHIPS participants understand the potential impacts of a participant's failure to fund.

PaymentsCo operations staff reviews the procedures for handling non-funding events, in addition to other exception procedures, on a regular basis throughout the year. The programs that enable controls and processes that apply in the event of non-funding are tested as part of quality control whenever changes or updates are made to the CHIPS system.

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121 CHIPS Rule 2(c)(2).

122 As discussed under Standard VII, only a small fraction of payment messages remain unreleased at end-of-day.

123 CHIPS Rule 13(c)(B)(i).

124 CHIPS Rule 13(c)(B)(ii).

125 *Id.*

SEGREGATION AND PORTABILITY

Standards XIV is not applicable to CHIPS.

CHIPS does not operate as a central counterparty.

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GENERAL BUSINESS RISK

> ***Standard XV[126]:*** *The SIFMU identifies, monitors, and manages its general business risk, which is the risk of losses that may arise from its administration and operation as a business enterprise (including losses from execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses) that are neither related to participant default nor separately covered by financial resources maintained for credit and liquidity risk.*

CHIPS observes Standard XV.

PaymentsCo identifies, monitors, and manages its general business risk through its Enterprise Risk Management Framework. PaymentsCo maintains liquid net assets that are sufficient to ensure a recovery or orderly wind-down of critical operations and services, as required by Regulation HH.

Enterprise Risk Management
Consistent with its Enterprise Risk Management Framework, PaymentsCo manages its general business risk through an annual risk assessment of each of its products, quarterly risk assessments performed by all departments, and continuous self-reporting of newly identified risks and risk mitigation. In addition, all key initiatives undertaken by PaymentsCo undergo three risk assessments: an initial (inherent) assessment at the concept stage of the initiative, an execution risk assessment once the initiative is approved, and a final (residual) risk assessment upon completion of the initiative.

PaymentsCo monitors risk across its enterprise by monitoring various risk inputs, including (i) risk assessments, (ii) business, operational, and other metrics, (iii) key risk indicators, and (iii) internal findings (policy exceptions, self-identified risks, audit findings, etc.). These inputs are

[126] 12 CFR §234.3(a)(15).

continuously tracked and reported. PaymentsCo manages identified risk through a process by which business units either accept or mitigate risks identified through any of risk assessments or other monitoring inputs. Any risks that are not consistent with PaymentsCo's Risk Appetite must be remediated through a documented remediation plan or accepted using an exception process.

Liquid Assets and Plan to Reduce Costs and Increase Revenue

PaymentsCo also manages general business risk through holding of liquid net assets and maintaining a viable plan for reducing cost and increasing revenue as required by Regulation HH.[127] The details of how PaymentsCo complies with these requirements are provided in its recovery and wind-down plan, which has been submitted to the Federal Reserve Board for approval and will be reviewed by PaymentsCo annually.

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CUSTODY AND INVESTMENT RISKS

> ***Standard XVI[128]:*** *The SIFMU (i) safeguards its own and its participants' assets and minimizes the risk of loss and delay in access to these assets by (A) holding its own and its participants' assets at supervised and regulated entities that have accounting practices, safekeeping procedures, and internal controls that fully protect these assets; and (B) evaluating its exposures to its custodian banks, taking into the full scope of its relationships with each; and (ii) invests its own and its participants' assets (A) in instruments with minimal credit, market, and liquidity risks, such as investments that are secured by, or are claims on high-quality obligors and investments that allow for timely liquidation with little, if any, adverse price effect; and (B) using an investment strategy that is consistent with its overall risk-management strategy and fully disclosed to its participants*.

CHIPS observes Standard XVI.

[127] *See* 12 CFR §234.3(a)(15)(i) and (ii). Although Regulation HH calls for a viable plan to raise equity, PaymentsCo's LLC Agreement prohibits PaymentsCo from requiring capital contributions from its members, other than upon admission as a member of PaymentsCo. Therefore, PaymentsCo's recovery and wind-down plan provides for measures to reduce costs and increase revenues.

[128] 12 CFR §234.3(a)(16).

PaymentsCo does not hold or serve as custodian for participant assets. PaymentsCo's own assets are held at supervised and regulated institutions and it invests its assets in low risk, liquid funds consistent with its investment policy statement.

PaymentsCo safeguards its assets by holding its funds at supervised and regulated banks. The company also safeguards its assets by investing in low risk funds that have diversified holdings and can be liquidated intra-day. PaymentsCo's has an Investment Committee that is comprised of PaymentsCo's CEO, General Counsel, two officers, and three investment professionals from member banks who perform asset management functions for their banks. The committee reviews PaymentsCo's portfolio of investment funds on a quarterly basis. In addition, an investment policy statement that sets forth PaymentsCo's investment strategy is reviewed annually by the committee. As PaymentsCo does not hold or invest participant assets, it does not disclose its investment policy statement to CHIPS participants.

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OPERATIONAL RISK

> ***Standard XVII[129]:*** *The SIFMU manages its operational risks by establishing a robust operational risk-management framework that is approved by the board of directors.*

CHIPS complies with Standard XVII.

PaymentsCo manages its operational risks through its Enterprise Risk Framework, which is approved annually by the Managing Board. CHIPS has excellent operational reliability and maintains an on-line up-time percentage in excess of 99.9%. PaymentsCo maintains back-up facilities and is capable of switching the operation of CHIPS from the primary data center to the back-up data center within 60 minutes from the time that a disaster is declared. Contingency procedures are tested on a quarterly basis and CHIPS participants are required to complete at least one test a year with PaymentsCo from their back-up facilities. In addition, PaymentsCo has comprehensive physical, information, and cyber-security policies, procedures, and controls.

Risk Management Framework

As discussed previously, PaymentsCo has adopted an Enterprise Wide Risk Management framework that is approved by the Managing Board each year. Operational risk is a key component of PaymentsCo's risk management framework and is assessed for all products and key initiatives. With respect to CHIPS, PaymentsCo monitors operational

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[129] 12 CFR §234.3(a)(17).

risk through the tracking of various performance standards and key risk indicators. Operational risks are managed consistently with PaymentsCo's Enterprise Risk Management Framework.

Operational Reliability

CHIPS reliability depends, among other things, on the availability of the CHIPS application, environmental applications, and the telecommunications network. Application outages are defined as disruptions in the CHIPS application software. Environmental outages involve the loss of hardware or environmental software that is not application-specific. Examples of hardware and software losses are disk drive or operating-system disruptions. Network outages occur when any segment of the telecommunications network, i.e., the hardware or software under control of PaymentsCo is not functioning.

PaymentsCo has an availability standard of 99.95% for each of the primary components of CHIPS: mainframe, network, and distributed systems. CHIPS consistently meets those standards. PaymentsCo also sets a number of other operational standards, including the number of operational incidents or settlement delays caused by PaymentsCo software, hardware, or procedural failures. Operational performance is measured against these standards on a monthly basis and reported to the CHIPS Business Committee at each meeting and the Managing Board on a regular basis.

PaymentsCo validates CHIPS' capacity regularly in the course of its standard regression testing routines. One important part of regression testing is performance and capacity testing, which proves that any changes in the system will not degrade performance or capacity of the main processing system or any of its subsystems.

CHIPS also has ample capacity to process all payment messages that participants are likely to send. The system has been tested and found to be able to process more than twice the number of payment messages that were sent on its highest volume day.[130]

System Security

PaymentsCo maintains a high degree of security, including internal logical and physical access controls, encryption, sender authentication, and change controls.[131]

CHIPS participants are responsible for the security of their internal systems used to originate and receive CHIPS payment messages.

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[130] Even though CHIPS has been tested for twice the highest recorded volume, PaymentsCo believes that CHIPS has ample capacity in excess of that amount based upon the review of utilization of communications networks, CPU utilization, and disk utilization during regression tests.

[131] For security reasons, information-security procedures are not made public.

CHIPS participants are authenticated each time a secure communications channels is established. All messages are encrypted using Advanced Encryption Standard and a 256-bit key.

Contingency

PaymentsCo employs a number of technological and business planning features to ensure that its business continuity capabilities are commensurate with its role as a SIFMU. CHIPS's centralized mainframe computers operate out of two fully redundant data centers. PaymentsCo uses one of these sites as a main processing center for CHIPS and the second as a live, real-time, hot back-up facility. This back-up facility can be brought on line within 60 minutes of the time that a disaster is declared. CHIPS operations at the hot back-up facility would be activated upon a failure of the primary data center. The two data centers are located in different regions of the country to mitigate the effects of regional power and telecommunication outages.[132]

Each data center has been designed with the following contingency features:

1. Power feeds and back-ups, including power feeds from different regional power utilities to the two data centers, non-interruptible power supply systems, power distribution units, and diesel generator back-up systems at each data center.

2. Environmental and emergency control systems, including redundant air handlers, cooling towers, separate air zones, and halon and sprinkler systems.

3. Redundant communication management environments and network-management systems with automatic cut-over features. Each data center is fed by diversely routed communications lines connected to multiple telephone company central offices ("Cos"). The communications links are designed to automatically fail over to the redundant diverse link and CO in the event of a communications link failure.

4. Redundant management environments and focal-point management systems with automatic cut-over features to manage the identification and reporting of problems.

[132] There is a second back-up site that is remote from the other two, but this is not a hot back-up site and would require some time to be brought up if one of the other two sites were to become unavailable.

5. Data center operations—day-to-day management and monitoring responsibilities.

6. Dual network-operations centers—continuous communication monitoring and management by network-operations staff located at the two data centers.

Same-Site Recovery

CHIPS uses a triplicate-write mirror disk-storage system that allows continuous processing if parts of the disk-storage system fail. This feature, commonly referred to as synchronous mirroring, simultaneously processes and stores all CHIPS transactions in three separate disk-storage areas. In the event of a disruption to the primary production environment, there is a same-site back-up environment that would take over production processing.

Off-Site Recovery

All data processed at the primary data center is written synchronously to the alternate data center disk-storage systems. Should the primary data center environment experience a disabling outage, the CHIPS application can be operational at the secondary back-up data center within 60 minutes after the declaration of a failure.

Participant Responsibilities

CHIPS participants are responsible for developing their own contingency and recovery plans, such as back-up computer and operations facilities, to ensure their ability to continue CHIPS operations in the event of an equipment failure or other operational interruption.

Contingency Testing

PaymentsCo conducts four mandatory disaster-recovery tests per year in which all CHIPS participants must actively participate. Network connectivity pathways and associated payment volumes are tested to ensure that CHIPS can recover each type of connection in the event of a disaster. The tests include all CHIPS participants to ensure adequate volume testing of the communications facilities. Business-resumption tests include primary data center failures tests, network recovery, and alternate data center recovery.

Table 3

Specific standards for operational risk management.

The SIFMU . . .	How PaymentsCo satisfies
Identifies the plausible sources of operational risk, both internal and external and mitigates their impact through the use of appropriate systems, policies, procedures, and controls that are reviewed, audited, and tested periodically and after major changes.[133]	PaymentsCo identifies plausible sources of operational risk, both internal and external through its annual CHIPS product risk assessment, quarterly risk assessments performed by operations, technology, and information security departments, and through a continuous self-reporting process. Identified risks are mitigated consistently with PaymentsCo's Enterprise Risk Framework. The systems, policies, procedures, and controls that are used to mitigate operational risk are reviewed, audited, and regression tested after major changes.
Identifies, monitors, and manages the risks its operations might pose to other financial market utilities and trade repositories, if any.[134]	PaymentsCo's operation of CHIPS does not pose risks to other financial market utilities or to trade repositories.
Has policies and systems that are designed to achieve clearly defined objectives to ensure a high degree of security and operational reliability.[135]	PaymentsCo sets clearly defined standards (goals) for its operational performance that ensure a high degree of security and operational reliability. The company has policies and systems that are designed to achieve those standards.
Has systems that have adequate, scalable capacity to handle increasing stress volumes and achieve the SIFMU's service-level objectives.[136]	PaymentsCo performs capacity testing of CHIPS systems on an annual basis. It also monitors CHIPS volumes against the maximum capacity tested on a monthly basis. This testing ensures that CHIPS'

[133] 12 CFR § 234.3(a)(17)(i).
[134] 12 CFR § 234.3(a)(17)(ii).
[135] 12 CFR § 234.3(a)(17)(iii).
[136] 12 CFR § 234.3(a)(17)(iv).

	systems maintain more than adequate capacity to handle increasing stress volumes and still meet PaymentsCo's operational standards.
Has comprehensive physical, information, and cyber security policies, procedures, and controls that address potential and evolving vulnerabilities and threats.[137]	PaymentsCo has numerous policies regarding security, including policies regarding information security, physical and environmental security, access control, incident management, and change control. Policies are reviewed and updated as needed annually to ensure they address potential and evolving vulnerabilities and threats. PaymentsCo has comprehensive procedures and controls to effectuate these policies.
Has business continuity management that provides for rapid recovery and timely resumption of critical operations and fulfillment of its obligations, including in the event of a wide-scale disruption or a major disruption.[138]	PaymentsCo's business continuity management is comprised of infrastructure, systems, policies, and procedures that enable rapid recovery and timely resumption of CHIPS operations, including in the event of a wide-scale disruption or a major disruption.
Has a business continuity plan that (A) incorporates the use of a secondary site that is located at a sufficient geographical distance from the primary site to have a distinct risk profile; (B) is designed to enable critical systems, including information technology systems, to recover and resume operations no later than two hours following disruptive events; (C) is designed to enable it to complete settlement by end of the day of the disruption, even in the case of extreme circumstances; and (D) is tested	PaymentsCo operates a live back-up site that can resume CHIPS operations within 60 minutes of the primary site's failure. The back-up site can perform all the functions of the primary site, including settlement and end-of-day distribution of positions from the CHIPS Prefunded Account. CHIPS operations are tested at the back-up site quarterly. In addition, PaymentsCo has contingency procedures in place with the Federal Reserve Bank of New York by which PaymentsCo can request an extension of the Fedwire

[137] 12 CFR § 234.3(a)(17)(v).
[138] 12 CFR § 234.3(a)(17)(vi).

at least annually.[139]	service past 6:30 p.m. or instruct end-of-day distributions through offline procedures.

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ACCESS AND PARTICIPANT REQUIREMENTS

> ***Standard XVIII**[140]**:** The SIFMU has objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.*

CHIPS complies with Standard XVIII.

Participation in CHIPS is available to any depository institution or foreign bank that meets the requirements detailed in the CHIPS Rules, which are publicly available. Pursuant to CHIPS Rule 19, a participant must (i) have an office located in the United States that is subject to regulation by a federal or state regulator, (ii) be a "financial institution" covered by the Federal Deposit Insurance Corporation Improvement Act, (iii) establish a "connection" to CHIPS that meets the requirements of the CHIPS Rules, and (iv) maintain primary and back-up computer facilities as required by the CHIPS Rules.[141]

In addition, each participant must have access to sources of credit and liquidity sufficient to enable it to pay its opening position requirement and its closing position requirement promptly, and it must be able to manage its operations in a way that will not delay or complicate the operations of CHIPS.[142] CHIPS participants that are foreign banks must agree that the obligations that they incur on CHIPS are obligations of the entire bank, not just its branch or agency in the United States.[143]

PaymentsCo employs a risk-based approach to its acceptance of participants by reviewing the financial condition of potential participants as part of its onboarding process. This review includes publicly available information about the potential participant as well as rating agency reports and financial statements provided by the potential participant. PaymentsCo also monitors participants' activity on CHIPS, including the timeliness of their funding, publicly available information about

[139] 12 CFR § 234.3(a)(17)(vii).

[140] 12 CFR §234.3(a)(18).

[141] CHIPS Rule 19(a)(1).

[142] CHIPS Rule 19(a)(2).

[143] CHIPS Rule 19(b).

participants, and (when necessary) data from private reporting services to assess whether participants may present a risk to the reliable and effective operation of CHIPS. A participant's status as a participant or a funding participant may be terminated or suspended at any time by PaymentsCo's CEO.[144]

Although PaymentsCo has broad discretion to terminate participants, the company recognizes that effective resolution regimes should ensure continuity of systemically important financial services and payment, clearing and settlement functions. PaymentsCo is committed to working with distressed participants and their regulators to facilitate orderly resolution and to limit the likelihood of systemic disruption to the global financial system. Hence, in practice PaymentsCo product, customer relations, and risk staff will contact participants when there is a concern about their activity or ability to meet their participation requirements. Discussions with participants often resolve concerns as PaymentsCo better understands the reasons for a matter that caused concern or the participant is able to improve performance of its obligations. In the event PaymentsCo determines to terminate a participant, to the extent that PaymentsCo can accommodate a transition period for the participant without exceeding risk beyond its Risk Appetite, PaymentsCo will likely to do so.

[144] CHIPS Rule 19(c).

Table 4

Specific standards for participant access.

The SIFMU . . .	How PaymentsCo satisfies
Monitors compliance with its participation requirements on an ongoing basis and has the authority to impose more stringent restrictions or other risk controls on a participant in situations where the SIFMU determines the participant poses heightened risk to the SIFMU.[145]	PaymentsCo monitors compliance with its participation requirements through its monitoring of participant activity, publicly available information, and private reporting services. PaymentsCo controls its risk related to any participant that poses a heightened risk to CHIPS through its ability to terminate a participant at any time.
Has clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that fails to meet the participation requirements.[146]	PaymentsCo has clearly defined operational and technical procedures for cutting off a participant's access to CHIPS which can be employed intra-day or after close of operating hours. PaymentsCo's Enterprise Risk Framework also has clearly defined risk escalation and mitigation procedures, which would be utilized in the event a participant was terminated. PaymentsCo does not make these procedures publicly available though it is willing to discuss the procedures with participants, if requested. PaymentsCo has held a number of discussions with individual participants over the past few years regarding how they would be treated under various resolution scenarios.

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[145] 12 CFR §234.3(a)(18)(i).

[146] 12 CFR §234.3(a)(18)(ii).

TIERED PARTICIPATION ARRANGEMENTS

> ***Standard XIX[147]:*** *The SIFMU identifies, monitors, and manages the material risks arising from arrangements in which firms that are not direct participants in the SIFMU rely on the services provided by direct participants to access the SIFMU's payment, clearing, or settlement facilities, whether the risks are borne by the SIFMU or by its participants as a result of their participation.*

CHIPS complies with Standard XIX.

CHIPS participants use CHIPS to clear and settle payments sent to them by their non-participant correspondent bank customers. However, as there is no credit or liquidity risk in CHIPS, no correspondent customers of participants present risk to other participants or to PaymentsCo. PaymentsCo has performed an analysis to validate that there is no "tiered" risk on CHIPS.

In the preamble to the 2014 revision to Regulation HH the Federal Reserve Board stated:

"[I]n an FMU in which a direct participant processes large transaction values on behalf of a large customer such as a large correspondent bank, the failure of the customer could jeopardize the direct participant's ability to meet its obligations to the FMU or to the other participants in the FMU. The failure to meet these obligations could result in liquidity dislocations that would pose significant liquidity risk to the FMU or to the other participants in the FMU. The Board acknowledges that certain designated FMUs with particular system designs may not face material risks arising from tiered participation arrangements, but these designated FMUs should present an analysis to that effect." [148]

CHIPS is a SIFMU that by design has no credit or liquidity risk. Hence, the inability of a participant's correspondent bank customer to meet its obligations to the participant cannot create credit or liquidity risk for other CHIPS participants. Moreover, CHIPS is not as highly concentrated as some other funds-transfer systems. For example, CHIPS has 49 participants compared to 21 on CHAPS (including the Bank of England). Of these 49 participants only one participant is responsible for more than 20% of total CHIPS send value and only three participants are responsible for more than 10% of total CHIPS send value. Hence, the inability of a CHIPS' customer to meet its obligations to a CHIPS participant is not likely to have any material impact on CHIPS.

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[147] 12 CFR §234.3(a)(19).

[148] 79 Fed. Reg. 65,543, at 65,553 (Nov. 5, 2014).

While PaymentsCo does not believe that there are any material risks arising from participants' use of CHIPS for their correspondent bank customers, it conducted an analysis to identify the nonparticipants whose funds transfers result in a significant percentage of CHIPS payment messages and identify the participants associated with these nonparticipants. Based on an analysis of CHIPS activity performed in July 2014 and again in January 2015, there was only one non-participant bank that accounted for more than 1% of total send value on CHIPS and only one non-participant bank that had significant enough activity to reach 10% of a participant's total send value. Based on this data, PaymentsCo concluded that CHIPS does not face any material risk that a nonparticipant's failure could jeopardize a CHIPS participant's ability to meet its funding obligations. This analysis will be repeated on an annual basis to ensure that there is no change in the risk presented by non-participants.

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LINKS

Standard XX is not applicable to CHIPS.

CHIPS does not operate as a central counterparty, securities settlement system, or central securities depository.

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EFFICIENCY AND EFFECTIVENESS

> ***Standard XXI[149]:*** *The SIFMU is (i) efficient and effective in meeting the requirements of its participants and the market it serves; (ii) has clearly defined goals and objectives that are measurable and achievable, such as minimum service levels, risk-management expectations, and business priorities; and (iii) has policies and procedures for the regular review of its efficiency and effectiveness.*

CHIPS complies with Standard XXI.

[149] 12 CFR §234.3(a)(21).

Efficiency and Effectiveness

For Participants. CHIPS provides its participants with a suite of services that together make it an efficient and effective way of making payments. As noted in the preceding sections, CHIPS provides for real-time final settlement of all payment messages as they are released, and the system-uptime record for CHIPS has consistently been 99.9% or better.

The CHIPS name and address file contains the names of some 45,000 accounts representing approximately 13,000 banks and business firms that are customers of CHIPS participants or their correspondent banks. CHIPS has assigned each of these entities a universal identification code ("UID") that a sending participant can use to identify a beneficiary or beneficiary's bank.[150] "Qualified" payment messages are a CHIPS innovation that greatly increases the percentage of payments that are processed "straight-through" without manual intervention. Over 97% of CHIPS payment messages are qualified or partially qualified by the use of a UID, SWIFT bank-identification code, or account number.

CHIPS also provides its participants with a number of tools that they can use to manage their CHIPS activity. Participants can see their positions relative to their counterparties', inquire about the status of pending payment messages, and manage other aspects of their CHIPS activities. These services are available on-line through a secure internet connection.

It should be noted that because of certain Federal Reserve policies regarding payment-system risk, for example, daylight overdraft pricing, debit caps, and collateral requirements, banks using the Fedwire Funds Service often manage their Fedwire traffic very carefully to ensure that they stay within certain limits As CHIPS does not have these controls, there is no need for banks to manage their CHIPS traffic in this way, and they often send all of the CHIPS payment messages to CHIPS as soon as they have cleared the banks' internal controls. The result is that banks manage their own Fedwire queues while they allow PaymentsCo to manage their CHIPS queues.

CHIPS participants also realize a liquidity-efficiency ratio (18:1) benefit when processing payment transactions over CHIPS. This is an advantage that CHIPS has over traditional RTGS systems which do not use netting algorithms.

For the Market. Because CHIPS provides a practical way for participants to make payments and because it is used by global U.S. and foreign banks to send a substantial portion of their U.S.-dollar payments, CHIPS provides substantial benefits to the U.S. and

[150] CHIPS Rules 9 and 10; CHIPS Admin. P. No. 5.

world markets. In addition to these benefits, the market benefits enormously from having a private-sector alternative to the central bank's funds-transfer system.

As a private-sector system, CHIPS focuses exclusively on the needs of its participants. As a result, the participants get excellent service and fast response to their changing needs. CHIPS also has a proven track record of continuous improvement and innovation, with rigorous testing and implementation standards to ensure that each new feature is introduced seamlessly and without any disruption to its participants.

Because Fedwire, the Federal Reserve Banks' funds-transfer system, faces continuous competition from an innovative, service-oriented system, it is forced to match CHIPS in both performance and service quality. This competition forces both CHIPS and Fedwire to be better than either would likely be if there were only one funds-transfer service in the United States.

Clearly Defined Goals and Objectives

As detailed in the discussion of Standards III (Risk Management Framework) and XVII (Operational Risk), PaymentsCo sets and measures itself against a number of clear goals and objectives regarding CHIPS' operational performance, customer service support, business objectives (revenue and volume growth; budgets); and level of acceptable risk.

Policies and Procedures for Review

Many of PaymentsCo's goals and objectives for CHIPS are measured on a daily, monthly, quarterly, and annual basis pursuant to business, technology and risk management policies. The metrics related to these goals and objectives are reviewed and discussed on an on-going basis by PaymentsCo's product, operations, and risk staff. The metrics are also reviewed and discussed with the CHIPS Business Committee with particular focus on whether CHIPS is operating effectively for current needs and anticipated future needs. The Managing Board also receives reports on CHIPS performance.

Additionally, for several years, PaymentsCo has conducted a customer satisfaction survey of both its owner and non-owner customers for each of its payment systems. These survey results serve as an additional measure of CHIPS efficiency and effectiveness in meeting participant needs. Hence, there are multiple metrics for reviewing CHIPS efficiency and effectiveness that are reviewed on an on-going basis and at different levels of PaymentsCo's governance structure. This on-going review process informs PaymentsCo's short and long term planning for sustaining and improving the efficiency and effectiveness of CHIPS.

Table 5

Specific standards for efficiency and effectiveness.

The SIFMU is efficient and effective in meeting the requirements of its participants and the market, in particular with regard to its	**How PaymentsCo Satisfies**
Clearing and settlement arrangement[151]	CHIPS provides real-time final settlement of all payment messages as they are released and a liquidity ratio of 1:18.
Risk-management policies, procedures, and system 16-s.[152]	PaymentsCo's Enterprise Risk Framework, including its policies, procedures and systems ensures the efficient and effective operation of CHIPS through management of operational, technical, information security, and other risk.
Scope of products cleared and settled.[153]	CHIPS provides clearing and settlement for USD funds transfers which enable many kinds of payments: wholesale, commercial, and retail and for originators and beneficiaries outside of the U.S.
Use of technology and communication procedures.[154]	PaymentsCo employs modern, highly reliable technology and communication procedures.

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[151] 12 CFR § 234.3(a)(21)(i)(A).
[152] 12 CFR § 234.3(a)(21)(i)(B).
[153] 12 CFR § 234.3(a)(21)(i)(C).
[154] 12 CFR § 234.3(a)(21)(i)(D).

COMMUNICATION PROCEDURES AND STANDARDS

> ***Standard XXII[155]:*** *The SIFMU uses, or at a minimum accommodates, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, and settlement.*

CHIPS complies with Standard XXII.

PaymentsCo employs two kinds of communications-networks: (i) a multiprotocol label switching ("MPLS") network and (ii) a back-up integrated-services digital network ("ISDN"). Both of these networks use IBM WebSphere® MQ. These are internationally accepted communication procedures.

Although CHIPS messages use a format that it is specific to CHIPS, the format is compatible with and is easily mapped to both SWIFT and Fedwire messages. PaymentsCo is considering adoption of ISO 20022 for CHIPS in the future and is a joint-participant in an effort with the Federal Reserve Bank of New York, NACHA – the Electronic Payments Association, and the Accredited Standards Committee X9, Inc. to evaluate the business case and engage in industry education for the standard in the U.S.

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DISCLOSURE OF RULES, KEY PROCEDURES, AND MARKET DATA

> ***Standard XXIII[156]:*** *The SIFMU has clear and comprehensive rules and procedures; publicly discloses all rules and key procedures, including key aspects of its default rules and procedures; provides sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the SIFMU and provides a comprehensive public disclosure of its legal, governance, risk management, and operating framework.*

CHIPS complies with Standard XXIII.

Clear and Comprehensive Rules and Procedures
The CHIPS Rules and the administrative procedures that are applicable to CHIPS ("CHIPS Administrative Procedures") are clear and comprehensive.

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[155] 12 CFR §234.3(a)(22).

[156] 12 CFR §234.3(a)(23).

They include detailed descriptions of:

- Rights and responsibilities of participants
- Primary and back-up computer requirements
- Prefunded balance account requirements
- Settlement procedures
- Contingency procedures

The *CHIPS Systems and Operations Manual* is an on-line manual compiled by The Clearing House and that includes detailed descriptions of CHIPS functions and procedures. This manual is made available to all CHIPS participants.

PaymentsCo maintains an education department that provides training for CHIPS participants. Classes emphasize CHIPS risk controls, and class content is revised to reflect any changes in CHIPS.

Public Disclosure of Rules and Procedures

The *CHIPS Rules and the CHIPS Administrative Procedures* are available to the public and appear on the CHIPS web site.[157] While there is no default on CHIPS, the *CHIPS Rules* address a participant's failure to fund its opening position requirement or closing position requirement.[158]

Sufficient Information Regarding Risks, Fees, and Material Costs

The CHIPS Rules provide sufficient information for CHIPS participants to understand the risks of participating in CHIPS. The rules also specify certain indemnification and loss sharing arrangements.[159] In addition, as explained in the discussion of Standard VII (Liquidity Risk), CHIPS participants are provided with customized reports of the impact of various stress scenarios on their CHIPS activity.

Fees and material costs for participation are disclosed to CHIPS participants on an annual basis.

Comprehensive Public Disclosure of Legal, Governance, Risk Management and Operating Framework

This self-assessment serves as PaymentsCo's public disclosure of its legal, governance, risk management and operating framework.

157 https://www.theclearinghouse.org/~/media/files/payco%20files/rulesgov%202013%20(3).pdf?la=en

158 *See,* CHIPS Rules 2(c)(2) and 13(c)(3)(B).

159 *See,* CHIPS Rules 14 and 15.

V. LIST OF PUBLICLY AVAILABLE RESOURCES

CHIPS Website https://www.theclearinghouse.org/payments/chips

APPENDIX A

MEMBERS OF
THE CLEARING HOUSE PAYMENTS COMPANY L.L.C.

Organizing Member
The Clearing House Association L.L.C.

Class A Members
Banco Santander, S.A.
Bank of America, National Association
Bank of the West
Barclays
The Bank of New York Mellon
Branch Banking and Trust Company
Capital One, National Association
Citibank, National Association
Citizens Bank
Comerica Bank
Deutsche Bank Trust Company Americas
Fifth Third Bank
HSBC Bank USA, National Association
JPMorgan Chase Bank, National Association
KeyBank National Association
Manufacturers and Traders Trust Company
MUFG Union Bank
PNC Bank, National Association
State Street Bank and Trust Company
SunTrust
The Toronto-Dominion Bank
UBS AG
U.S. Bank National Association
Wells Fargo Bank, National Association

Class AA Members
City National Bank
First-Citizens Bank & Trust Company

APPENDIX B

CHIPS PARTICIPANTS

Agricultural Bank of China
Banco Bilbao Vizcaya Argentaria, S.A.
Banco do Brasil, S.A.
Bangkok Bank Public Company Limited
Bank Hapoalim B.M.
Bank Leumi USA
Bank of America, National Association
Bank of China
Bank of Communications
The Bank of New York Mellon
The Bank of Nova Scotia
The Bank of Tokyo–Mitsubishi UFJ, Ltd.
Barclays Bank PLC
BNP Paribas
Branch Banking and Trust Company
Brown Brothers Harriman & Co.
China CITIC Bank International Limited
China Construction Bank Corp.
China Merchants Bank
Citibank, National Association
Commerzbank Aktiengesellschaft
Credit Agricole Corporate & Investment Bank
Crédit Industriel et Commercial
Deutsche Bank Aktiengesellschaft
Deutsche Bank Trust Company Americas
Habib American Bank
Habib Bank Limited
HSBC Bank USA, National Association
Industrial & Commercial Bank of China
Intesa Sanpaolo S.P.A.
Israel Discount Bank of New York
JPMorgan Chase Bank, National Association
KBC Bank N.V.
Manufacturers and Traders Trust Company
Mashreqbank psc
Mega International Commercial Bank Co., Ltd.
Mizuho Corporate Bank, Ltd.
The National Bank of Kuwait SAK
The Northern Trust Company
The Royal Bank of Scotland PLC

Société Générale
Standard Chartered Bank
State Bank of India
State Street Bank and Trust Company
Sumitomo Mitsui Bank and Trust Company
UBS AG
Union Bank, National Association
Wells Fargo Bank (NY), National Association
Wells Fargo Bank (CA), National Association