

**CLEARING HOUSE
INTERBANK PAYMENTS SYSTEM
("CHIPS")**

**SELF-ASSESSMENT OF COMPLIANCE
WITH
CORE PRINCIPLES FOR SYSTEMICALLY IMPORTANT
PAYMENT SYSTEMS**

OVERVIEW

In the interest of strengthening the world's financial infrastructure, the Committee on Payment and Settlement Systems ("CPSS") of the central banks of the Group of Ten Countries has developed ten core principles for systemically important payment systems ("Core Principles").¹ The Core Principles have received strong and widespread international support and are intended to serve as universal guidelines for the design and operation of systemically important payment systems worldwide. In 2004, the Board of Governors of the Federal Reserve System ("Federal Reserve Board") adopted the Core Principles as part of its Policy on Payments System Risk ("PSR Policy"),² and in 2007, the Federal Reserve Board further amended its PSR Policy to establish an expectation that systemically important payment systems would publicly disclose their self-assessments against the Core Principles.³

The Clearing House Interbank Payments System ("CHIPS"⁴) 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 330,000 "payment messages"⁵ worth an

¹ COMMITTEE ON PAYMENT AND SETTLEMENT SYSTEMS, BANK FOR INTERNATIONAL SETTLEMENTS, CORE PRINCIPLES FOR SYSTEMICALLY IMPORTANT PAYMENT SYSTEMS (Jan. 2001) ("CORE PRINCIPLES REPORT") (available on-line at <http://www.bis.org/publ/cpss43.pdf>). The definition of "systemically important" is provided in § 3.0.2 of the CORE PRINCIPLES REPORT.

² 69 Fed. Reg. 69,926 (Dec. 1, 2004).

³ 72 Fed. Reg. 2518 (Jan. 19, 2007).

⁴ CHIPS is a registered service mark of The Clearing House Payments Company L.L.C.

⁵ A "payment message" is an electronic message that, when released by CHIPS to the receiving participant, instructs the receiving 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

aggregate of \$1.45 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 is universally regarded as a systemically important payment system. CHIPS therefore meets or exceeds the standards for safety and soundness set by internationally accepted norms, most especially those established by such standard-setting bodies as CPSS and the Federal Reserve Board.

As the following analysis demonstrates, CHIPS observes each of the ten Core Principles.

The Clearing House

The Clearing House⁶ 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, Electronic Payments Network (an automated clearinghouse), check-image services, automated settlement, and on-line adjustment services.

CHIPS

BACKGROUND

CHIPS is a real-time computerized system for transmitting and settling 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 almost 40 years of reliable operation, CHIPS serves 47 foreign and domestic banks, representing 21 countries, through a network of sending and receiving devices, which range

(“CHIPS Admin. P.”) are available at <http://www.chips.org/financials/operations/rulesDocs/000720.pdf>.

⁶ 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 at pp. 38–43, *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 “PaymentsCo”; otherwise, the organization is referred to as “The Clearing House.”

from microcomputers to large-scale mainframe computers. The system maintains a database of more than 40,000 of its participants' accounts. These accounts are associated with more than 10,000 banks and business entities that regularly send or receive CHIPS payment messages. CHIPS participants include U.S. commercial banks and foreign banks with offices in the United States.⁷

The Clearing House 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, computer-readable format. The payment message includes some or all of the following information:

- Value date⁸
- Sending participant's CHIPS identification number
- Receiving participant's CHIPS identification number
- Dollar amount
- Intermediary bank⁹ identification
- Beneficiary's bank¹⁰ identification
- Beneficiary¹¹ identification
- Originator¹² identification
- Originator's bank¹³ identification

⁷ Appendix B is a list of CHIPS participants.

⁸ 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.

⁹ 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.

¹⁰ 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.

¹¹ 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.

¹² 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.

- Instructing bank¹⁴ identification

Other fields provide space for various parties to provide information to other parties to the funds transfer.

The payment message is sent to CHIPS through one of two communications-interface options that participants can choose: (i) The Clearing House's own frame-relay network using IBM WebSphere® MQ, or (ii) SWIFTNet, with which the participant may also 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 edits, rejecting any payment message that does not pass the edits. Once these 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.¹⁵

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. Each participant's current position is the sum of the "opening position" that is established early in the CHIPS funds-transfer business day when the participants send Fedwire payment orders to the CHIPS Prefunded Balance Account at the Federal Reserve Bank of New York ("FRBNY") plus the debits and credits that have resulted from payment messages that it sent or received earlier in the day.¹⁶

¹³ 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.

¹⁴ 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.

¹⁵ *See* CHIPS Rules 2(c), 13(a).

¹⁶ CHIPS Rules 2(d), 13.

Prefunded Balance Account and Current Positions.

FRBNY has opened on its books 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”).¹⁷ 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”).¹⁸ 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 position¹⁹ and any increases or decreases to the opening primary position resulting from sending or receiving payments messages (its “current primary position”²⁰); (ii) initial supplemental position,²¹ including any increases or decreases to the initial supplemental position resulting from sending or receiving payment messages and any voluntary additions to or withdrawals of a supplemental position (the initial supplemental position, including these increases and decreases, is called the “current supplemental position”²²); and (iii) a “combined position,”²³ which is the sum of the current primary position and the current supplemental position. A participant may designate any or all of the 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.²⁴

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

¹⁷ 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 periodically at least once each month. CHIPS Rule 12(b)(1)(A).

¹⁸ CHIPS Rule 12(c)(1).

¹⁹ CHIPS Rule 12(b)(1)(D).

²⁰ CHIPS Rule 12(b)(2).

²¹ CHIPS Rule 12(c)(1).

²² CHIPS Rule 12(c)(2).

²³ CHIPS Rule 12(d)(1).

²⁴ CHIPS Rule 12(c)(3).

primary position” and “minimum current supplemental position”).²⁵ 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”).²⁶

CHIPS also calculates a maximum current supplemental position that is designed to facilitate the operation of the algorithm that controls the release of payment messages.²⁷ But the maximum current supplemental position limits only the size that the current supplemental position can reach through the receipt of nonpriority payment messages; the receipt of urgent and preferred payment messages are not constrained by this limit.²⁸

Withdrawals.

No participant is permitted to withdraw any amount from the prefunded balance account in respect of its current primary position.²⁹ 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.³⁰ 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 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.

²⁵ CHIPS Rule 12(e).

²⁶ CHIPS Rule 12(e)(1).

²⁷ CHIPS Rule 12(e)(2).

²⁸ *Id.*

²⁹ CHIPS Rule 12(f)(2).

³⁰ CHIPS Rule 12(f)(1).

No participant may withdraw any amount from the prefunded balance account by sending a payment order directly to FRBNY.³¹ The Clearing House is the exclusive agent of the funding participants, and FRBNY will accept payment orders with respect to the balance in the account only from The Clearing House.

Releasing Payment Messages.

A participant may designate any payment message as “urgent” or “preferred.”³² 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”).³³ Urgent and preferred payment messages are sent to a receiving participant without regard to any maximum current supplemental position limits on the receiving participant.³⁴

For receiving participants, CHIPS settles and releases all urgent and preferred payment messages without regard to any limit on the receiving participant’s maximum current supplemental positions.³⁵ No nonpriority payment message is released if its receipt would cause the receiving participant to exceed its maximum current primary position or its maximum current supplemental position.³⁶

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.³⁷ CHIPS ensures that neither of these positions ever goes below

³¹ CHIPS Rule 12(a)(4).
³² CHIPS Rule 2(b).
³³ CHIPS Rule 13(a)(1)(B).
³⁴ CHIPS Rules 12(e)(2), 13(a)(1)(A)(vii).
³⁵ *Id.*
³⁶ CHIPS Rule 13(a)(1)(A)(iv).
³⁷ CHIPS Rule 13(b).

zero and that the maximum limits on these positions are not breached.³⁸

The sum of a participant's current primary position and its current supplemental position is its "combined position."³⁹ 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.⁴⁰

Treatment and Status of Unreleased Payment Messages.

Although almost all payment messages are settled before CHIPS closes for the receipt of payment messages, a small number of payment messages (usually around 50 to 150) 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).⁴¹ This process typically releases another 10 to 25 payment messages. Immediately following this procedure, CHIPS calculates a multilateral net balance for each participant based upon the remaining unreleased payment messages (usually around 40 to 125 payment messages worth an aggregate of about \$8 to \$16 billion) without actually netting, setting off, or releasing those payment messages.⁴² 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.⁴³ (The aggregate of these net amounts typically runs to \$5 or \$12 billion, or less than 1% 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."⁴⁴

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

³⁸ CHIPS Rule 13(a)(1)(A).

³⁹ CHIPS Rule 12(d)(2).

⁴⁰ CHIPS Rule 13(c)(1).

⁴¹ CHIPS Rule 13(c)(1).

⁴² CHIPS Rule 13(c)(2).

⁴³ *Id.*

⁴⁴ *Id.*

closing position requirement to the prefunded balance account.⁴⁵ Once all of these funds transfers have been completed, the remaining unreleased payment messages are netted, set off, and released.⁴⁶ 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.⁴⁷

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, CHIPS 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 the final funding phase.⁴⁸ The payment messages of any participant that did not send the required Fedwire payment orders remain in the mix (unless the bank has suspended payments). This procedure allows CHIPS to release as many payment messages as possible.

Sending participants are notified of any payment messages that remain unreleased following this procedure.⁴⁹ 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.

⁴⁵ CHIPS Rule 13(c)(3).
⁴⁶ CHIPS Rule 13(c)(3)(A)(i).
⁴⁷ CHIPS Rule 13(c)(3)(A)(ii).
⁴⁸ CHIPS Rule 13(c)(3)(B).
⁴⁹ CHIPS Rule 13(d).

LEGAL BASIS

***Core Principle I:** The system should have a well founded legal basis under all relevant jurisdictions.*

CHIPS observes Core Principle 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.

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”)⁵⁰. 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.”⁵¹ The principal New York law governing funds transfers is Article 4-A of the New York Uniform Commercial Code. The netting provisions of the Federal Deposit Insurance Corporation Improvement Act of 1991 (“FDICIA”)⁵² are also relevant.

⁵⁰ 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.

⁵¹ 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.”)

⁵² 12 U.S.C. §§ 4401–4407.

Choice of Law

New York law treats each branch or separate office of a bank as a separate bank for purposes of funds transfers.⁵³ Each CHIPS participant must be a U.S. depository institution or a U.S. branch or agency of a foreign bank, and a foreign participant's connection to CHIPS must be its U.S. branch or agency.⁵⁴ 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.⁵⁵

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,”⁵⁶ New York law does in fact bear a reasonable relation to matters involving CHIPS payment messages because the company that owns and operates CHIPS is located in New York and CHIPS payment messages typically are routed through communications and computer equipment located in New York. 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.⁵⁷ Accordingly, although foreign laws may be applicable to

⁵³ N.Y. U.C.C. § 4-A-105(1)(b).

⁵⁴ See CHIPS Rules 6 and 19.

⁵⁵ N.Y. U.C.C. § 4-A-507(3).

⁵⁶ *Id.* § 4-A-507(1)(a).

⁵⁷ See *id.*

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.

The following are additional laws relating to Core Principle 1:

INSOLVENCY LAW

All CHIPS participants must be U.S. depository institutions or U.S. branches or agencies of foreign banks. Should one of these fail, it would be liquidated under the provisions of federal or state banking laws, or, in rare instances, under federal bankruptcy law.⁵⁸ 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.

OTHER U.S. LAWS

Certain U.S. statutes may affect a participant’s rights and obligations with respect to a CHIPS payment message. These include the International Emergency Economic Powers Act⁵⁹ and other statutes administered by the Treasury Department’s Office of Foreign Assets Control, various anti-money laundering regulations,⁶⁰ and regulations implementing the Expedited Funds Availability Act.⁶¹

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

⁵⁸ 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.

⁵⁹ 50 U.S.C. §§ 1701-1707.

⁶⁰ See, e.g., 12 C.F.R. § 103.33(e), (g).

⁶¹ See 12 C.F.R. pt. 229.

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.

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 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.⁶²

Similarly, section 404(a) provides that:

Notwithstanding any other provision of law, the covered contractual payment obligations and covered contractual payment entitlements of a 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.⁶³

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

⁶² 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).

⁶³ *Id.* § 4404(a).

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.⁶⁴

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.⁶⁵ 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.⁶⁶ 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.⁶⁷

⁶⁴ N.Y. U.C.C. § 4-A-406(2).

⁶⁵ *See id.* § 4-A-104(1).

⁶⁶ *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.

⁶⁷ 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 facilitates the tracking of returned payments message by mandating specific identifiers for payments messages that return payments. *See* CHIPS Admin. P. No. 3.

UNDERSTANDING FINANCIAL RISKS

Core Principle II: *The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.*

CHIPS observes Core Principle II.

The CHIPS Rules and the administrative procedures that are applicable to CHIPS (“CHIPS Administrative Procedures”) are detailed and comprehensive and permit participants to understand the financial risks resulting from participation in the system.

The CHIPS Rules and the CHIPS Administrative Procedures 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 Rules and the CHIPS Administrative Procedures are available to the public and appear on the CHIPS web site.⁶⁸

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.

The Clearing House 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.

The Clearing House's committee structure also provides an opportunity for CHIPS participants to understand the risks involved in CHIPS and take an active role in managing those risks on a system-wide basis. As noted in the discussion of Core Principle X, each member of PaymentsCo that is a CHIPS participant and a representative sample of other participants are members of the CHIPS business committee. The business

⁶⁸ <http://www.chips.org/financials/operations/rulesDocs/000720.pdf>.

committee has been delegated responsibility for reviewing and approving changes to the CHIPS Rules and Administrative Procedures and for making recommendations to the PaymentsCo managing board regarding the development of new products and services for CHIPS. The CHIPS business committee has subcommittees, including the CHIPS Funds Transfer Committee and the CHIPS and Fedwire Committee, which deal with CHIPS operations and other matters. These committees typically meet on a monthly or bimonthly basis and often discuss matters involving the risks related to CHIPS and how these risks can be mitigated by the banks themselves or by CHIPS in a more systemic way. For example, the CHIPS Funds Transfer Committee has been extensively involved in discussions of the end-of-day process, how that can be improved, and the risks associated with it can be mitigated. These issues have also been discussed with the CHIPS and Fedwire Committee. In addition to providing members of The Clearing House with a stake in governance, these committees provide a valuable way for banks to understand risk and to seek ways to control and mitigate that risk individually and collectively.

It should also be noted that all CHIPS participants are banks that are regulated by and examined periodically by one or more bank regulatory agencies. Bank regulators have adopted policies that require the banks under their jurisdiction to take reasonable steps to assess and control the risks associated with participation on funds-transfer systems,⁶⁹ and bank examiners have made compliance with these requirements a part of their examination procedures.⁷⁰

[A discussion of the financial risks that CHIPS participants may face, and the tools that CHIPS uses to manage those risks and the tools that it provides to its participants for them to use in managing their risks, may be found in the discussion of Core Principle III.]

⁶⁹ See, e.g., Office of the Comptroller of the Currency, U.S. Department of the Treasury, Banking Circular No. 235 (May 10, 1989), available at <http://www.occ.treas.gov/ftp/bc/bc-235.doc>.

⁷⁰ See e.g., FEDERAL FINANCIAL INSTITUTIONS EXAMINATION COUNCIL, WHOLESALE PAYMENT SYSTEMS BOOKLET, available at <http://www.ffiec.gov/ffiecinfobase/booklets/Wholesale/toc.htm>.

RISK MANAGEMENT

Core Principle III: *The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.*

CHIPS observes Core Principle III.

Control of credit and liquidity risk is a primary concern. CHIPS has procedures and features that manage this risk.

Financial Risk on CHIPS

Financial risks on CHIPS may be classified as “credit risk” or “liquidity risk.”

CREDIT RISK

Credit risk is defined as the “exposures between participants [that] arise in systems in which there is a delay between a payment’s acceptance by the system for settlement and its final settlement.”⁷¹ CHIPS Rule 2(d) provides that “[a] Sending Participant does not become obligated to pay the amount of a payment message to the Receiving Participant until CHIPS has released the payment message to the Receiving Participant.” 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 cancelled by the sending participant.⁷² Thus, an unreleased payment message has not been “accepted for settlement” by CHIPS. Because payment messages are “accepted for settlement” only upon release of the payment message by CHIPS to the receiving participant, and because CHIPS provides for a settlement of each payment upon release, there is no “delay between a payment’s acceptance by the system for settlement and its final settlement,” and thus no credit risks with respect to unreleased payment messages.

⁷¹ CORE PRINCIPLES REPORT ¶ 7.3.4 at 23.

⁷² See N.Y. U.C.C. § 4-A-211; see also CHIPS Rule 2(a).

LIQUIDITY RISK

CHIPS participants, like participants on any payment system, including real-time gross settlement systems, may face liquidity risks in obtaining the funding necessary to make payments over the system.⁷³ In the case of CHIPS, participants require liquidity to pay their opening position requirements (without which they cannot send or receive CHIPS payment messages) and their closing position requirements (if any). These payments are made through Fedwire payment orders that are sent by the participant itself or another bank on its behalf.

The CHIPS Rules contain a number of provisions to allow participants to assess and deal with any liquidity risks that may arise as a result of their participation on CHIPS. Banks understand that payments may remain in a queue prior to release, and that for a very small number of payment messages, these delays may be significant.⁷⁴ Nevertheless, CHIPS provides participants with the means to accelerate the release of any payment message from the CHIPS queue. These include the ability to designate payment messages as “priority” or “urgent” payment messages⁷⁵ and the ability to supply additional funding to the prefunded balance account to provide additional liquidity to release payment messages.⁷⁶

The CHIPS Rules and Administrative Procedures also contain provisions designed to minimize these delays by ensuring that there are sufficient payment messages in the queue to allow the netting procedures to work efficiently and to distribute liquidity in the System to ensure its efficient operation. These include requiring participants to begin sending payment messages to CHIPS by certain deadlines and requiring that participants complete sending to CHIPS a certain percentage of the their payment messages by certain times during the day.⁷⁷ CHIPS also caps the maximum amount of liquidity that any participant can accumulate; this keeps too much unused liquidity from pooling at a few participants who are not likely to use that liquidity to send more payment messages through CHIPS.⁷⁸ CHIPS has also experimented with

⁷³ See CORE PRINCIPLES REPORT ¶ 7.3.8 at 24.

⁷⁴ On average, about 3% of payment messages (around 10,000 payment messages) remain in the queue for more than 15 minutes. Even so, delays are not likely to be exceptionally long. On average there are rarely more than 700 payment messages in the queue at any one time.

⁷⁵ CHIPS Rule 2(b).

⁷⁶ CHIPS Rule 12(c).

⁷⁷ CHIPS Admin. P. No. 12(b).

⁷⁸ See CHIPS Rule 12(e).

increasing the cap on the participants' current position before the 5:00 P.M. close of the System for the acceptance of new payment messages, increasing the limit at 4:30 P.M., and, when that appeared to have no adverse effects and helped to speed the release of some payment messages, moving the time back further to 4:00 P.M., and finally on December 2008 was moved further back to 3:00 P.M.

While operational problems at the CHIPS central computer or at a participant's site can contribute to financial risk, security and contingency procedures mitigate risk exposure. Contingency procedures are described in the *CHIPS Systems and Operations Manual*.⁷⁹

End-of-Day Procedure and Unreleased Payment Messages.

RISKS RESULTING FROM THE END-OF-DAY PROCESS.

CHIPS finality takes the traditional requirement that “[a] system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation”⁸⁰ to an entirely new level. One hundred per cent of all payment messages settle when they are released. There is no possibility of a settlement failure on CHIPS.

The Clearing House does not believe that the end-of-day closing procedure that it uses to clear and settle the few payment messages if a participant with a closing position requirement is unwilling or unable to pay that requirement presents any substantial risks to CHIPS participants. In the first place, no payment message is released until it is settled. There is thus no possibility that CHIPS will unwind any unsettled payment messages as would happen if a funds-transfer system that relied exclusively on settlement of netted payment orders at the end of the day were unable to complete settlement. Second, only a small fraction of payment messages are cleared in the end-of-day procedure, and only a small subset of this fraction would not be released if a participant were unable or unwilling to pay its closing position requirement. Third, this is a very rare occurrence. In the nine years since CHIPS inaugurated intraday finality, there was only one occasion when a participant was unable to pay its closing

⁷⁹ A fuller description of CHIPS contingency procedures may be found in the discussion of Core Principal VII at pp. 32–33, *infra*.

⁸⁰ CORE PRINCIPLES REPORT at 32

position requirement, and that was during the crisis following the terrorist attacks of September 11, 2001.⁸¹

When the initial closing, netting, and release phase is completed, CHIPS calculates for each participant its closing position. CHIPS managers are given a report for each participant showing its closing position. Each participant whose closing position is a negative number has a “closing position requirement” and is given 30 minutes to send a Fedwire payment order in the amount of its closing position requirement. CHIPS managers get instantaneous reports whenever a participant pays its closing position requirement. If a participant has not made its payment within a few minutes, a manager will call the bank to see if there are any problems or if The Clearing House can offer any assistance. This active management has helped to ensure that the end-of-day closing procedure is completed on average in less than 15 minutes.

EFFECT OF A PARTIAL FINAL PREFUNDING.

One risk that participants may have as a result of the end-of-day process is that if one or more participants do not pay their closing position requirements a portion of the 40 to 125 payments messages that were unresolved may not be completed. As other participants would anticipate receiving some of those uncompleted payments, they could be required to find liquidity to replace the payments that they did not receive through CHIPS in order to complete their other payment obligations (e.g., late payments that they were expecting to send over Fedwire). Although, as noted above, the risk of such a “partial final prefunding” are minimal, The Clearing House believes that it is necessary to ensure that all CHIPS participants understand these risks and have in place procedures to deal with such a situation. Accordingly, The Clearing House has instituted a program to ensure that each participant understands what the failure of one or more other banks to pay their closing position

⁸¹ On September 12, 2001, one participant working out of its back-up site was unable to instruct its Federal Reserve Bank to send its closing position requirement to the CHIPS prefunded balance account by the cut-off time, and CHIPS concluded the end-of-day process with a partial final funding of the prefunded balance account under CHIPS Rule 13(c)(3)(B). Out of 200,172 payments messages handled by CHIPS on that day, only 85 payment messages (0.04%) were not completed, with 71 of those 85 (83.5%) being sent by the bank that did not fund. The value of the expired payment messages was \$7.333 billion, 0.72% of the \$1.015 trillion sent through CHIPS that day; \$5.428 billion (74%) of the expired payment messages were sent by the bank that did not pay its closing position requirement.

requirements could mean to it and that they have plans to deal with such contingencies.

Once per year (or at such other intervals as The Clearing House finds useful or necessary) The Clearing House runs a simulation of the failure of one or more banks to pay their closing position requirements. Simulations may include the failure to pay of: (i) the bank with largest closing position requirement, (ii) the two banks with the largest closing position requirements, and (iii) all banks from selected countries. The results of these simulations are presented to the CHIPS business committee. Simulations vary from year to year based on suggestions made by the committees. For 2009, the simulations included the following:

- The five banks with the largest final funding requirements did not fund.
- All banks from Europe with final funding requirements did not fund.
- All banks from Japan with final funding requirements did not fund.

The results, which included the CHIPS payment messages that would not be completed as a result of the partial final funding and the banks that would not receive payments as a result of the partial final funding, were reviewed and discussed with the CHIPS Business Committee and the CHIPS Funds Transfer Committee. Clearing House management also discusses the possibility of payments not being completed at the end of day with the banks during regular relationship meetings.

Credit Criteria for Participants

The most fundamental method of controlling credit and liquidity risk on any funds-transfer system is to ensure that the individual participants are creditworthy. CHIPS minimizes the risk of the end-of-day closing procedure by ensuring that its participants, which are the banks that would have to pay that requirement, are creditworthy. CHIPS accomplishes this as follows:

1. All CHIPS participants must be regulated by a state or a federal bank regulatory authority. This requirement ensures that participants are examined on a regular basis to determine whether they are in

compliance with applicable laws and are operating in a sound manner.⁸²

2. 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.”⁸³ The Clearing House judges whether a prospective participant has the required liquidity, in part, through credit reports on the prospective participant from a recognized rating agency. Credit reports may also be obtained on current participants.

⁸² CHIPS Rule 19(a)(1)(B).

⁸³ CHIPS Rule 19(a)(2).

PROMPT FINAL SETTLEMENT

***Core Principle IV:** The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.*

CHIPS observes Core Principle IV.

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 Core Principle I.⁸⁴

Prompt Release of CHIPS Payment Messages

Although CHIPS clearly provides prompt final settlement for all payment messages as soon as a settlement obligation arises, the operation of the algorithm that controls the release of payment messages may keep some payment messages in a queue for a period of time before a payment message is released. Some have questioned whether these circumstances may increase the difficulty faced by participants in managing their liquidity. Analysis of the circumstances surrounding management of the CHIPS queue, however, demonstrates that whatever delays result are not serious, are easily managed by the participants, and are similar in nature to the delays caused by internal queue management that the banks themselves engage in.

During the second and third quarters of 2009, CHIPS released 91.8% of payment messages within one minute of receipt, and 97.8% of payment messages within 15 minutes of receipt. In other words, only 2.2% of all payment messages were in the queue for more than 15 minutes.

If a participant believes that a payment message is time-critical and must be released immediately, CHIPS provides tools to speed the release, including designation of a payment message as a priority payment message or a preferred payment message,⁸⁵ and supplemental funding.⁸⁶ Participants always can, and occasionally do, remove payment messages that are in the queue from CHIPS and send them over Fedwire.

⁸⁴ See pp. 12–15, *supra*.

⁸⁵ CHIPS Rule 2(b).

⁸⁶ CHIPS Rule 12(c).

SETTLEMENT IN MULTILATERAL NET SYSTEMS

***Core Principle V:** A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.*

CHIPS observes Core Principle V.

Use of Multilateral Netting by CHIPS

Each payment message received by CHIPS is processed through a computer program that controls the release of payment messages to ensure that no payment message is released unless release is consistent with the CHIPS Rules. Those rules specifically provide that no participant's combined position may be less than zero or greater than its maximum current primary position.⁸⁷ If these release criteria are satisfied for a payment message, CHIPS will release the payment message individually.

If the release of an individual payment message would cause the sending participant's combined position to fall below zero or cause the receiving participant to exceed any applicable current position, CHIPS will hold that payment message and search the queue for payment messages from the receiving participant to the sending participant that can be included in a batch and netted against it. If payment messages to and from two participants can be netted and released without either participant falling below its minimum current position or exceeding its maximum current position, the payment messages in the batch will be netted; the amount of each payment message will be deducted from the sending participant's current primary position, its current supplemental position, or both; the amount of each payment message will be added to the current position of the receiving participant; and the payment messages in the batch will be released.

If the available payment messages between two participants are not sufficient to create a batch of payment messages that can be released within the parameters set by the CHIPS Rules, payment messages from other participants will be added to create a multilateral batch so that all payment

⁸⁷ CHIPS Rule 12(c)(2).

messages in the batch can be multilaterally netted, the amount of each payment message deducted from the current position of the sending participant and added to the current position of the receiving participant, and the payment messages in the batch will be released.

As is the case with individual settlement and release, the net change to the current position of each participant with one or more payment messages in a bilateral or multilateral batch will not cause any participant's current position to drop below its minimum current position or exceed its maximum current position.

After CHIPS closes for the receipt of payment messages, a few payment messages will remain unreleased. These payment messages are released in accordance with a multilateral netting and release process that relies on additional funding by a subset of the participants. This netting process is discussed in detail in the section on payment-message processing.⁸⁸

End-of-Day Process

Core Principle V provides that “[a] system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement *obligation*.”⁸⁹ The CHIPS end-of-day procedure is not, however, subject to this requirement because the procedure does not give rise to any settlement obligation on the part of any participant.

CHIPS Rule 2(d) provides that

[a] Sending Participant does not become obligated to pay the amount of a payment message to the Receiving Participant until CHIPS has released the payment message to the Receiving Participant. Release of a payment message by CHIPS to the Receiving Participant creates an obligation of the Sending Participant to pay the Receiving Participant the amount of the payment message, and, simultaneously when the payment message is released, this obligation is netted to the extent provided for in Rule 13 and settled in accordance with Rule 13.

⁸⁸ See pp. 3–9, 20–22, *supra*.

⁸⁹ Emphasis added.

Thus a CHIPS payment message in the queue, either before or after the start of the end-of-day process, does not carry with it any obligation to pay the amount of the payment message. That obligation arises only when the payment message is released, and CHIPS Rule 13 provides a mechanism to ensure that this obligation is settled and discharged as soon as it arises.

Note that in describing the end-of-day process, the CHIPS Rules never use of the term “settlement obligation.” Instead, they use the term “closing position requirement” as signifying the amount that each participant whose closing position is a negative number would have to pay if all unreleased payment messages were to be released and settled.⁹⁰ But this closing position requirement is not an obligation, and failure to make this payment is not a default. Rather, the participant’s obligation arises only upon release of a payment message.

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.⁹¹ If a bank uses a funds-transfer system to transmit a payment order to a receiving participant, the system is the sender’s agent.⁹² 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.⁹³

⁹⁰ See CHIPS Rule 13(c)(2).

⁹¹ See N.Y. U.C.C. §§ 4-A-209, 4-A-301, 4-A-302.

⁹² See *id.* § 4-A-206(1).

⁹³ See *id.* § 4-A-211; see also CHIPS Rule 2(a).

As no CHIPS participant has any obligation to settle unreleased payment messages, the CHIPS end-of-day procedure involves no obligation that is covered by Core Principle V.⁹⁴

¹⁰² See Core Principle III for a discussion of the tools that CHIPS has provided participants to speed the release of payment messages that remain in the queue.

SETTLEMENT ASSETS

***Core Principle VI:** Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.*

CHIPS observes Core Principle VI.

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. This arrangement means that CHIPS settlement entails little or no credit or liquidity risk.

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.⁹⁵

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

⁹⁵ 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.

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 each participant's current position is matched, dollar-for-dollar, by a claim against the central bank, CHIPS observes Core Principle VI.

SECURITY AND OPERATIONAL RELIABILITY

***Core Principle VII:** The system should have a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.*

CHIPS observes Core Principle VII.

CHIPS is protected by strict security standards. CHIPS has excellent operational reliability and maintains an on-line up-time percentage in excess of 99.9%. Back-up facilities are maintained, and CHIPS is capable of switching from the primary data center to the back-up data center within five minutes. Contingency procedures are tested on a quarterly basis.

System Security

CHIPS maintains a high degree of security, including internal logical and physical access controls, encryption, sender authentication, and change controls.⁹⁶

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

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.

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 The Clearing House, is not functioning. The availability standard for CHIPS is 99.9%. CHIPS consistently meets that standard.

⁹⁶ For security reasons, information-security procedures are not made public.

CHIPS also has ample capacity to process all payment messages that banks are likely to send. The system has been tested and found to be able to process twice the number of payment messages that were sent on its highest volume day.⁹⁷

CHIPS validates its 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.

The capacity tests are performed with a simulator tool that can generate test transactions of all types. The simulator operates on a separate computer system and submits transactions through the same subsystems used by CHIPS participants. Using a separate simulator and submitting transactions through the communications subsystems used in production allows The Clearing House to measure and review the performance and capacity of the communications network, processing queues, and back-end databases in as close to real-life production as possible.

Contingency

The Clearing House is committed to meeting the business-continuity objectives set out in the *Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System*.⁹⁸ CHIPS falls within the definition of a “core clearing and settlement organization” as set out in the *Interagency Paper*; that is, it is a private-sector market utility “whose primary purpose is to clear and settle transactions for critical markets or transfer large-value wholesale payments.”⁹⁹ The *Interagency Paper* takes the position that “core clearing and settlement organizations should develop the capacity to recover and resume clearing and settlement activities *within the business day on which the disruption occurs* with the overall goal of achieving recovery and resumption within two hours after an event.”¹⁰⁰

⁹⁷ Even though CHIPS has been tested for twice the highest recorded volume, The Clearing House 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.

⁹⁸ 68 Fed. Reg. 17,809 (Apr. 11, 2003).

⁹⁹ *Id.* at 17,811.

¹⁰⁰ *Id.* at 17,812 (emphasis in original).

The Clearing House employs a number of technological and business planning features to ensure that it meets the requirements of the *Interagency Paper*. CHIPS's centralized mainframe computers operate out of two fully redundant data centers. CHIPS uses one of these sites as a main processing center and the second as a real-time, live, hot back-up facility. 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.

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.
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 immediately 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 five 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

CHIPS 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.

EFFICIENCY AND COST-EFFECTIVENESS

***Core Principle VIII:** The system should provide a means of making payments which is practical for its users and efficient for the economy.*

CHIPS observes Core Principle VIII.

Practicality for Users

CHIPS provides its participants with a suite of services that together make it a practical 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 40,000 accounts representing 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.¹⁰¹ “Qualified” payment messages are a CHIPS innovation that greatly increases the percentage of payments that are processed “straight-through” without manual intervention. Over 95% of CHIPS payment messages are qualified by the use of a UID, S.W.I.F.T. 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 and debit caps, banks using Fedwire 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

¹⁰¹ CHIPS Rules 9 and 10; CHIPS Admin. P. No. 5.

own Fedwire queues while they allow The Clearing House to manage their CHIPS queues.

Efficiency for the Economy

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 world economies. In addition to these benefits, the economy 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.

ACCESS CRITERIA

Core Principle IX: *The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.*

CHIPS observes Core Principle IX.

Participation in CHIPS is available to any depository institution or foreign bank that meets the requirements detailed in CHIPS Rule 19, that is, it 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 Instance 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.¹⁰² 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.¹⁰³

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.¹⁰⁴

¹⁰² CHIPS Rule 19(a)(1).

¹⁰³ CHIPS Rule 19(a)(2).

¹⁰⁴ CHIPS Rule 19(b).

GOVERNANCE

Core Principle X: *The system’s governance arrangements should be effective, accountable, and transparent.*

CHIPS observes Core Principle X.

The legal arrangements for the governance of The Clearing House affords participants appropriate opportunities to exercise effective control over the operation of the system. Those who manage the system on a day-to-day basis are accountable to the banks that own The Clearing House.

The Clearing House Payments Company L.L.C.

CHIPS is owned and operated by The Clearing House Payments Company L.L.C. (“PaymentsCo”), a Delaware limited liability company. PaymentsCo was formed in 2004 as part of a reorganization designed to bring all of the payments businesses of The Clearing House into one integrated company. In addition to CHIPS, PaymentsCo operates Electronic Payments Network (an automated clearing house), and check image-exchange services.

LEGAL STRUCTURE

A limited liability company is a form of business entity that shares some of the attributes of a partnership and some of the attributes of a corporation, and is thus an attractive form for business entities with a limited number of owners. The owners of a limited liability company (who are referred to as “members”¹⁰⁵) have limited liability similar to that of the owners of a corporation,¹⁰⁶ and a limited liability company with more than one member may elect to be taxed as a corporation or as a partnership.¹⁰⁷

A Delaware limited liability company may engage in almost any activity that a Delaware corporation may engage in, i.e., any lawful business, whether or not for profit, except that it

¹⁰⁵ See, DEL. CODE ANN. tit. 6 §§ 18-101(11), 18-301.

¹⁰⁶ See, *id.* § 18-303; see also, Legal Business Structure Table, http://revenue.delaware.gov/services/Business_Tax/business_structures_table.pdf

¹⁰⁷ See Treas. Reg. § 301.7701-3; DEL. CODE ANN. tit. 6 § 18-1107(a); see also Legal Business Structure Table. PaymentsCo has elected to be taxed as a corporation.

may not engage in the banking business.¹⁰⁸ While PaymentsCo is not exempt from taxes as a not-for-profit entity, its business model is that of a utility for its members and the participants of its payment systems. PaymentsCo therefore does not expect to earn any substantial profits from its operations, and its members do not expect any distributions in respect of their common membership interests.

MEMBERS

Ownership of a limited liability company is vested in one or more “members.”¹⁰⁹ A limited liability company may establish different classes of members,¹¹⁰ and PaymentsCo has established three classes of members: Class A, Class AA, and the organizing member.¹¹¹ 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 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.¹¹² 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.

A banking organization may apply to become a Class A or a Class AA member of PaymentsCo if it is

- (a) a commercial bank or trust company that
 - (1) has a charter granting it unrestricted banking powers issued by a state of the United States or the Comptroller of the Currency,
 - (2) has its principal office within the United States, and
 - (3) is not affiliated with any Class A or Class AA member; or
- (b) a foreign bank that

¹⁰⁸ See, DEL. CODE ANN. tit. 6 § 18-106(a).

¹⁰⁹ See *id.* §§ 18-101(11), 18-301;

¹¹⁰ See *id.* § 18-302.

¹¹¹ A list of members is attached as Appendix A.

¹¹² 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). As noted in the text, PaymentsCo does not expect to earn any substantial profits from its operations, and its members do not expect any distributions in respect of their common membership interests.

- (1) has powers in its home jurisdiction similar to those of a U.S. bank or trust company with unrestricted banking powers,
- (2) has a U.S. branch or agency licensed by a U.S. state or the Comptroller of the Currency, and
- (3) is not affiliated with a Class A or Class AA member.

The applicant must be engaged in the types and volumes of banking activities sufficient to participate effectively in the various functions of PaymentsCo to the mutual benefit of all the members (including the applicant) and must be an active participant in one or more of PaymentsCo's payment services or have submitted a time frame for becoming a participant.

An applicant meeting these standards will be admitted as a member upon the affirmative vote of three-quarters of the supervisory directors, payment of the required capital contribution, and the submission of documents indicating its agreement to be bound by PaymentsCo's governing documents (i.e., the limited liability company agreement, by-laws, certificate of formation, and the Delaware Limited Liability Company Act).

Members of a Delaware limited liability company are in general entitled to information regarding the company's financial condition, identification of the company's other members, and "[o]ther information regarding the affairs of the limited liability company as is just and reasonable."¹¹³

MANAGEMENT

Management of PaymentsCo is under the direction of two boards of directors: the supervisory board and the managing board. 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 also appoint a representative to the managing board.¹¹⁴

¹¹³ DEL. CODE ANN. tit. 6 §§ 18-305.

¹¹⁴ The Class AA members generally appoint one representative to the board of managing directors for each four Class AA members, except

The managing board, in turn, appoints a business committee for each of the 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. 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.

While the managing board has ultimate responsibility to approve changes to the CHIPS rules, it has delegated this authority to the CHIPS business committee. In other respects, the business committee advises PaymentsCo regarding service levels, risk-management policies, and operational performance; makes recommendations to the managing board regarding the development of new products and services; and provides leadership and support for industry and regulatory initiatives to ensure the continued safety and soundness of the payments system.

The CHIPS business committee has a number of subcommittees that deal with such matters as CHIPS operations, Fedwire, and other issues. These committees consist of representatives of PaymentsCo members that are CHIPS participants and other participants; the subcommittees usually meet monthly or bimonthly. Proposals for systems or service enhancements, pricing changes, and other issues of general interest to the participants are usually considered in the first instance by the appropriate subcommittee, with recommendations going to the CHIPS business committee.

These arrangements ensure that the governance is transparent to all CHIPS participants and they have an appropriate level of involvement in the governance of the system.

Supervision and Audit

SUPERVISION

In connection with the Comptroller of the Currency's regulations regarding noncontrolling investments by national banking associations in PaymentsCo,¹¹⁵ PaymentsCo has agreed to be subject to the Comptroller's supervision and examination. PaymentsCo also invites the Office of the Comptroller of the

that there is always at least one, but no more than four, Class AA representative directors on that board.

¹¹⁵ 12 C.F.R. § 5.36(e).

Currency, the Board of Governors of the Federal Reserve System, the Federal Reserve Bank of New York, the Office of Thrift Supervision, and the New York State Banking Department to conduct examinations of its information-technology operations. These examinations are conducted in accordance with the guideline and procedures established by the Federal Financial Institutions Examination Council.

EXTERNAL AUDIT

The Clearing House engages a major public accounting firm to perform annual audits of the financial statements of PaymentsCo and the Association. In addition, the controls in place on CHIPS and the operating effectiveness of these controls are tested annually by an independent auditing firm under the American Institute of Certified Public Accountants' Statement of Auditing Standards No. 70, *Reports on the Processing of Transactions by Service Organizations* ("SAS 70 reports"), and these SAS 70 reports are made available to all CHIPS participants.

INTERNAL AUDIT

Internal auditing is concerned with a comprehensive continuing program of audits that places emphasis on risk management, control, governance processes, and efficient profitable operations. The internal-audit activities are performed in a manner that provides reasonable assurance that audit work conforms to the Institute of Internal Auditors' *International Standards for the Professional Practice of Internal Auditing*, The Clearing House's internal audit charter, and effectiveness and efficiency procedures designed to control audit work.

The activity of internal auditing is primarily one of information gathering, review, analysis, evaluation, appraisal and testing for the degree of compliance with and the adequacy of managerial systems and controls put in place to mitigate risks that exist in achieving organizational objectives. The internal audit activity is free to review and appraise policies, plans, procedures, and other internal controls in any area of the company and to report audit observations and recommendations for improvement to the people who have managerial responsibility. This review and appraisal in no way relieves other persons in the organization of responsibilities assigned to them.

PaymentsCo's chief audit executive 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.

APPENDIX A

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

Organizing Member

The Clearing House Association L.L.C.

Class A Members

Bank of America, National Association

The Bank of New York Mellon

Branch Banking and Trust Company

Citibank, National Association

Comerica Bank

Deutsche Bank Trust Company Americas

HSBC Bank USA, National Association

JPMorgan Chase Bank, National Association

KeyBank National Association

PNC Bank, National Association

RBS Citizens, National Association

UBS AG

Union Bank, National Association

U.S. Bank National Association

Wells Fargo Bank, National Association

Class AA Members

City National Bank

Fifth Third Bank

First-Citizens Bank & Trust Company

Manufacturers and Traders Trust Company

APPENDIX B

CHIPS PARTICIPANTS

ABN AMRO Bank N.V.
Banco Bilbao Vizcaya Argentaria, S.A.
Banco de La Nacion Argentina
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.
Caylon
China Merchants Bank
Citibank, National Association
Commerzbank Aktiengesellschaft
Crédit Industriel et Commercial
Deutsche Bank Aktiengesellschaft
Deutsche Bank Trust Company Americas
Habib Bank Limited
HSBC Bank USA, National Association
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.
Mitsubishi UFJ Trust and Banking Corporation
Mizuho Corporate Bank, Ltd.
The National Bank of Kuwait SAK
The Northern Trust Company
Société Générale
Standard Chartered Bank
State Bank of India

State Street Bank and Trust Company
Sumitomo Mitsui Bank and Trust Company
UBS AG
Wachovia Bank, National Association
Wells Fargo Bank, National Association