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Disclosure on Bank of Canada Risk-Management Standards for Prominent Payment Systems

June 30, 2017

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This disclosure can also be found at www.payments.ca
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Executive summary

Payments Canada¹ is Canada's main financial market infrastructure for payments. We underpin the Canadian financial system and economy by providing safe, efficient and effective clearing and settlement of payments.

We own and operate Canada's national payment clearing and settlement infrastructure, including associated systems, by-laws, rules and standards. Payments Canada operates two primary clearing and settlement systems: the Automated Clearing Settlement System (ACSS) and the Large Value Transfer System (LVTS). In addition, the US Dollar Bulk Exchange (USBE) system is used for clearing payments in U.S. dollars.²

The Governor of the Bank of Canada has designated, in May 2016, ACSS for oversight under the *Payment Clearing and Settlement (PCS) Act* as a clearing and settlement system that has the potential to pose payments system risk. Designation brings the system under the formal oversight of the Bank of Canada, which requires compliance with Risk Management Standards³ (Standards) for Prominent Payment Systems (PPS).

The Standards are based on the CPMI-IOSCO⁴ Principles for Financial Market Infrastructures⁵ (PFMIs) but were modified to reflect that PPS faces risks of a different nature and lower magnitude than systemically important payment systems do; PPS Standards and their application are, therefore, proportional to the risks present in the PPS.

This document is intended to provide relevant disclosure to members and stakeholders on

Payments Canada's governance, operations and risk-management framework with regard to the ACSS.

This disclosure describes Payments Canada's operations and its approach to observing the applicable Standards as well as how its Modernization project will meet the Bank of Canada's regulatory objectives and PPS Standards.

Payments Canada's Modernization journey began in 2015 and is being documented through a series of industry whitepapers including a Vision for the Canadian Payment Ecosystem⁶, published April 2016 and the Industry Roadmap and High Level Plan⁷, published December 2016. The new Settlement Optimization Engine (SOE) will replace the existing ACSS and USBE and act as a batch total entry system for the clearing of lower value payments.

Summary of major changes since last disclosure update

This is the first public release of Payments Canada's disclosure on the PPS Standards. Updates will be provided and published following significant changes to the system or its environment.

General background of Payments Canada

Payments Canada's mandate is to:

- Establish and operate national systems for the clearing and settlement of payments and other arrangements for the making or exchange of payments;
- Facilitate the interaction of Payments Canada's

¹ Payments Canada is the operating brand name of the Canadian Payments Association (CPA). For legal purposes we continue to use CPA (or the Association) in all information related to rules, by-laws, standards and various other instances

² Settlement of USBE balances is done through banks in New York.

³ Available at: <http://www.bankofcanada.ca/wp-content/uploads/2016/02/criteria-risk-management-standards.pdf>

⁴ CPMI-IOSCO: Committee on Payment and Settlement Systems - International Organization of Securities Commissions

⁵ Available at: <http://www.bis.org/cpmi/publ/d101a.pdf>

⁶ Available at: https://www.payments.ca/sites/default/files/vision-canadian-payments-ecosystem_edited.pdf

⁷ Available at: <https://www.payments.ca/modernization/industry-roadmap-high-level-plan>

systems with others involved in the exchange, clearing and settlement of payments; and

- Facilitate the development of new payment methods and technologies.

In pursuing its mandate, Payments Canada promotes the efficiency, safety and soundness of its clearing and settlement systems and takes into account the interests of users. In order to achieve this, dialogue, consultation, research, policy development and outreach are imperative to Payments Canada's stewardship of the payments ecosystem in Canada.

The LVTS facilitates the transfer of irrevocable payments between Canadian financial institutions while the ACSS is where the vast majority of payments in Canada are cleared. That amounts to about 28 million transactions on an average business day. Although it handles 99% of the daily transaction volume, it only accounts for 13% of the value cleared by all our systems.

Along with operating the systems, Payments Canada develops, implements and updates the rules and standards that govern the clearing and settlement of payments between its members.

Payments Canada members

The Bank of Canada and all chartered banks operating in Canada are required to be members of Payments Canada. Trust and loan companies, credit union centrals, federations of caisses populaires and other deposit-taking institutions, life insurance companies, as well as securities dealers and money market mutual funds that meet certain requirements are also eligible to be members. As of December 2015, Payments Canada had 114 active members. Payments Canada's Member Advisory Council (MAC), which was created by the CP Act, is composed of a maximum of 20 members appointed by the board of directors. MAC serves as a consultative and engagement forum for the Payments Canada membership. It is broadly representative of the

diversity of Payments Canada's membership and provides the board of directors with advice on Payments Canada's clearing and settlement systems, the interaction of those systems with others involved in the exchange, clearing and settlement of payments and the development of new technologies.

Members of Payments Canada can be either direct or indirect clearers in the ACSS. Eligibility criteria for being a direct clearer include being a Payments Canada member and maintaining a settlement account and loan facility at the Bank of Canada. An indirect clearer is a member of Payments Canada that does not maintain a settlement account or loan facility at the Bank of Canada and has a direct clearer acting as its agent in the ACSS clearing and settlement process.

Payments Canada stakeholders

Payments Canada develops and implements rules, standards and procedures that apply to payments exchanged by Payments Canada members who use these systems for clearing and settlement. Although the rules are developed for payments exchanged by members, they do affect the way consumers, government and businesses make payments.

Other payment systems fall partially within the scope of Payments Canada domain. In the case of Interac and some third-party payment processors, these schemes operate separately, but rely on Payments Canada's systems for clearing and settlement. Many private offerings or schemes (e.g. credit cards and e-wallets), choose to rely on Payments Canada's LVTS to effect settlement.

The Payments Canada's Stakeholder Advisory Council (SAC), which was established by the *Canadian Payments Act* (CP Act), has a maximum of 20 members representing the views of Payments Canada broad stakeholder base, including consumers, businesses, retailers, and governments, as well as related service providers. The SAC provides advice to our board of directors on payment, clearing, and settlement

matters, and contributes input on proposed initiatives, including by-laws, policy statements, and rules that affect third parties. It also identifies issues that might concern payment system users and service providers, and suggests how they could be addressed.

Payments Canada legal and regulatory framework

The CP Act sets out the legal framework for Payments Canada, including its mandate, the types of organizations eligible for membership and the role of the board of directors.

The Minister of Finance has oversight powers respecting Payments Canada and payment systems under the CP Act. These include approval and directive powers regarding by-laws, rules and standards set out by Payments Canada, or any other payment systems designated for such oversight under the CP Act.

The PCS Act gives the Bank of Canada responsibility for overseeing clearing and settlement systems for the purpose of controlling systemic risk or payments system risk. Payments Canada's LVTS has been designated as systemically important under this Act in 2012 and ACSS as a prominent payment system in 2016; therefore Payments Canada is also subject to oversight from the governor of the Bank of Canada for the LVTS and the ACSS.

ACSS design and operations

From an operational perspective, the core of the ACSS, the "ACSS application", is an information system which determines clearing balances based on volume and value totals entered into it. It is supported by standards and rules framework which govern the exchange, clearing and settlement of those items.

The ACSS model on the other end encompasses the processes, requirements, arrangements and system features and functions that apply to the bilateral exchange of payment items between eligible Payments Canada members and the clearing and settlement of those payment items.

The ACSS model is characterized as an uncollateralized debit entry⁸ deferred net settlement system⁹ (DNS) which provides for exchange of payment items between members of Payments Canada who participate in the ACSS and the subsequent clearing and settlement of those payment items.

More specifically, the ACSS model is categorized as "peer-to-peer" because eligible participants exchange payment items directly with each other on a bilateral basis (Figure 1: flow 1) and, following the exchange of these payments, direct clearers which are owed funds create manual entries in the ACSS application against each other on a bilateral basis (Figure 1: flow 2). The ACSS application then calculates both bilateral and multilateral net positions (Figure 1: flow 3). Multilateral net positions are the clearing balances used for settlement across direct clearers ACSS settlement accounts at the Bank of Canada (Figure 1: flow 4). A summary of the ACSS model is depicted in Figure 1.

i- Exchange of Payments

The specifics of the exchange vary depending on the stream of payment items. Direct clearers exchange their own paper or electronic payment items and those of their indirect clearers with each other before entry into the ACSS application. Payments Canada sets the rules and standards that apply to the exchange of different payment items.

Paper items that are accepted on deposit at branches and Automated Banking Machines

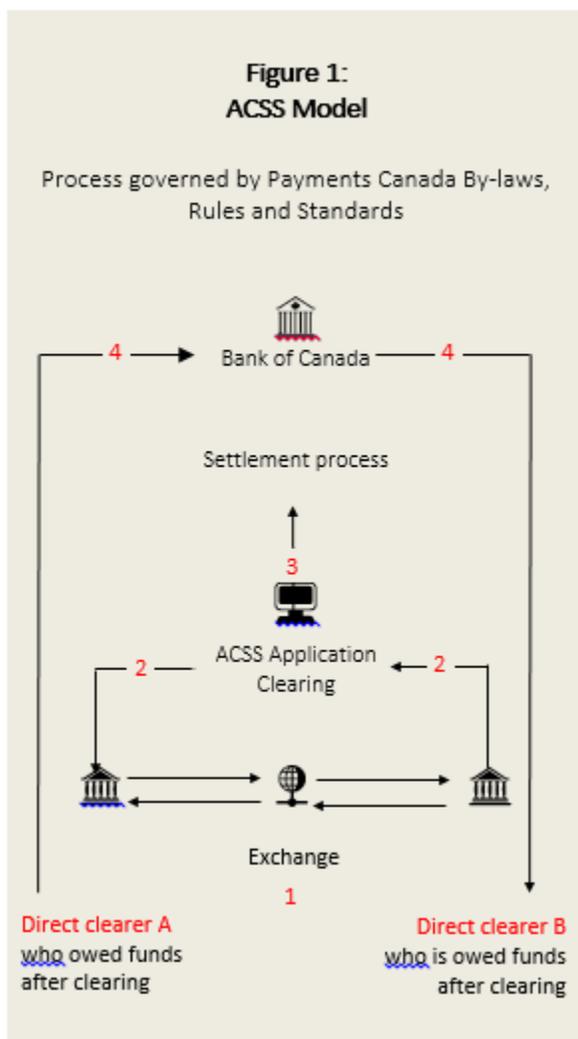
⁸ The ACSS is a "debit pull" system whereby the direct clearer that is owed funds enters the data in the ACSS.

⁹ The ACSS is a "deferred net settlement system" since final settlements occur between direct clearers at the end of a

predefined settlement cycle after the net obligations between direct clearers are calculated.

(ABMs) throughout the country are transported to one of six regional exchange points.

Electronic Items are exchanged electronically via the CPA Services Network (CSN) or other telecommunications networks (i.e. Interac, The Exchange Network)



ii- Clearing of Payments

The clearing process is the same for each stream of payment items. Following the exchange of paper and electronic payment items, direct clearers that are owed funds create entries as of appropriate value date in the ACSS application against each other direct clearer. Manual entries are made into the ACSS application at a workstation that is linked to Payments Canada’s host computer. Entries are made on a regional or

national basis and there are multiple entries throughout the day. Each entry is a “batch” representing multiple payment items of the same stream and is entered with a total volume and value by payment stream.

The ACSS application combines all payment streams for all regions and all deliveries and calculates multilateral netted positions. The ACSS application nets “by position”, therefore each party remains legally obligated for the underlying gross amounts until the net amount is paid. The ACSS application calculates both bilateral and multilateral net positions. Multilateral net positions are the “ACSS clearing balances” to be settled. The ACSS application provides statistical reports on all clearing activities to participants and the Bank of Canada.

iii- Settlement

Each direct clearer starts and ends each ACSS cycle with a zero balance “ACSS settlement account” at the Bank of Canada.

Settlement is effected by the Bank of Canada through a sequence of credit and debit entries to direct clearers’ ACSS settlement accounts in accordance with their final ACSS clearing balances. The LVTS enables ACSS settlement as it is used to transfer funds to (from) the Bank of Canada from (to) direct clearers to round the process.

Participation

Participation in the ACSS model is based on a tiered framework. Participant members of Payments Canada may be either a direct clearer, group clearer or indirect clearer. All Participant members are responsible to ensure payment items are exchanged in accordance with by-laws and rules, and that entries into the ACSS are made in accordance with the rules. Only direct clearers, group clearers and the Bank of Canada may make entries into the ACSS.

There are 11 Payments Canada members that participate as direct clearers or group clearers. Each direct clearer or group clearer makes

entries in their ACSS terminal for the clearing of payment items¹⁰. The remaining members (over 100) participate as indirect clearers and use the services of clearing agent.

For a member to act as a direct clearer, the member must:

- Maintain a settlement account with the Bank of Canada.
- Have a loan facility with the Bank of Canada.
- Have a payment items volume of no less than 0.5% of the total national volume of payment items giving rise to clearing through the ACSS, as determined in accordance with the rules, or any lower percentage of that volume that may be set out in the rules.
- Meet the technical, financial and other requirements set out in the rules.

The requirements to qualify as a group clearer are essentially the same, except the volume threshold is applied to the aggregate payment items volume of the group clearer and the other entities belonging to the group.

The role of clearing agent can be performed by a direct clearer or a group clearer.¹¹ A clearing agent, on behalf of indirect clearer(s), exchanges payment items and either effects clearing and settlement or makes entries into the ACSS application. This is accomplished through settlement accounts each indirect clearer holds with their respective clearing agent. Arrangements between clearing agents and indirect clearers are provided for in bilateral contracts external to Payments Canada by-laws and rules.

Throughout the remainder of this document, references to direct clearers will imply the

inclusion of group clearers, unless specifically noted.

Risk Management

Payments Canada has a sound risk-management framework for comprehensively managing its risks. Risk is the uncertainty that surrounds future events and outcomes. As such, it is inherent in all we do and, therefore, risk management is critical to Payments Canada fulfilling its core purpose, vision, and strategic plan.

It is Payments Canada policy to manage risk in accordance with a risk appetite approved by the board of directors

. To do this, Payments Canada develops strategies to mitigate risk - probability, impact and velocity - and maximizes the positive effects of strategic opportunities. Payments Canada's formal risk management process is overseen by its board of directors, implemented by management, and executed by all employees. The r-approved Enterprise Risk Management Policy sets out the roles and responsibilities for risk management and governance.

At a high-level, risk control and/or management tools within the ACSS model include the default framework to ensure the system settles (see standard 9 for more detail) and access criteria (see standard 13 for more detail).

Statistics

Table 1 provides a summary of the value and volume cleared and settled annually between direct clearers through the ACSS.

¹⁰ In accordance with Rules E1 and E4, a direct clearer can act as a settlement intermediary. As such, the clearing agent or group clearer facilitates settlement between the delivering and receiving direct clearer involve in a Point-of-Service Payment.

¹¹ In reference to the members of the group, the group clearer is not a clearing agent. A group clearer may act as a clearing agent with entities that do not belong to the group.

Table 1 - Annual statistics

Payment items exchanged between direct clearers through the ACSS

Payment item	Key metrics ¹²	2016	2015
Cheques and paper items	Volume	599,371,256	658,084,133
	Value (\$000)	2,986,314,735	3,035,540,453
Automated Funds Transfers (AFT) debits	Volume	820,667,492	785,411,039
	Value (\$000)	693,570,051	674,284,957
Automated Funds Transfers (AFT) credits	Volume	907,561,585	871,283,602
	Value (\$000)	2,308,666,885	2,164,687,472
Automated Banking Machine (ABM) transactions	Volume	193,538,626	199,606,463
	Value (\$000)	24,534,117	24,865,061
Point of Sale (POS) debits and credits	Volume	4,462,009,783	4,031,909,480
	Value (\$000)	182,604,880	173,024,279
Electronic Data Interchange (EDI):	Volume	2,991,026	2,890,816
	Value (\$000)	211,474,395	213,457,039
Electronic remittances	Volume	440,239,863	439,449,667
	Value (\$000)	199,503,343	184,242,791
Total volume		7,426,379,631	6,988,635,200
Total value (\$000)		6,606,668,406	6,470,102,052

¹² Annual statics on payment items exchanged between directly clearing financial institutions through the ACSS are available at: <https://www.payments.ca/about-us/our-systems-and-rules/retail-system/statistics>

Standards narrative disclosure

Standard 1: Legal basis

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

Payments Canada owns and operates the ACSS as set out in the CP Act.

The legal framework for the ACSS is built on a strong statutory foundation, including: the CP Act; the PCS Act, which outlines the oversight of Payments Canada. The legal framework and the underlying payment exchanges are set out in (i) CPA By-law No. 3 – Payment Items and Automated Clearing Settlement System (ACSS By-law); (ii) a comprehensive set of rules and standards; and (iii) CPA By-law No. 6 – Compliance (Compliance By-law).

The ACSS by-law is a regulation under the federal *Statutory Instruments Act* and subject to the requirements and scrutiny of that legislation. Payments Canada by-laws that relate to the administration of Payments Canada may be approved by the board of directors. All other by-laws (and by-law amendments) must be approved by the Minister of Finance.

Amendments to the rules are approved by the board of directors, which includes seven independent directors, and are also subject to the rule disapproval process of the Minister of Finance. As such, the activities of Payments Canada in the operation of the ACSS flow from statutory authority, which provides a high level of certainty, transparency and enforceability.

Working together, Payments Canada and its members have put in place common rules and procedures to maintain and enhance an effective payments system. Working groups, committees and other such forums are engaged in the evolution of the ACSS and its

rules. All ACSS rules and amendments are reviewed by the Bank of Canada, approved by the board of directors and are subject to the rule disapproval process of the Minister.

The material aspect of its clearing and settlement activity which Payments Canada considers requiring a high degree of legal certainty include: netting, finality of settlement and the default management procedures.

Legal basis for netting

- The ACSS calculates settlement totals on the basis of multilateral position netting. While there is less legal certainty in terms of enforceability of position netting (than there is with netting by novation), there is a greater degree of assuredness when the netting arrangement is supported by a strong legal framework.
- The legal framework for netting in the ACSS is made up of a combination of legislation (primary and subordinate) and the common law. The PCS Act provides a legislative basis for netting by participants in a clearing and settlement system. The legislation offers protection for all “netting agreements” between financial institutions and the termination of those agreements in the event of a default or insolvency. Netting is also based to a large extent on the right of set-off, the availability of which is determined by the common law and legislation, including insolvency legislation in Canada.
- CPA by-laws and rules made pursuant to

the CP Act also deal with netting. Netting for settlement purposes is explicitly provided for under the ACSS By-law, where settlement is defined as “payment of the clearing balance”. “Clearing balance” is defined as “the total of the net amounts owing to or by a member as a result of clearing”. The term “clearing” is defined as “the reconciliation of payment items that were exchanged and the calculation of the ACSS clearing balances.” It is expected that the provisions in the ACSS By-law with respect to netting would constitute a “netting agreement” within the meaning of the PCS Act.

Finality of settlement

- The ACSS clearing balances of direct

clearers are settled on the books at the Bank of Canada following the close of each applicable ACSS cycle. In accordance with the ACSS By-law, settlement at the Bank of Canada is final and may not be reversed under any circumstances.

Default management procedures

- CPA by-laws and rules clearly articulate Payments Canada’s default framework to ensure the system settles, while also reducing the risk of a negative impact on the reputation of Payments Canada, the Canadian payments system and Payments Canada members. More detail information regarding the framework for default can be found in Standard 9 Participant-default rules and procedures.

Standard 2: Governance

PPS should have governance arrangements that are clear and transparent, promote the safety and efficiency of the PPS, support confidence in and the smooth functioning of the markets it serves, and support other relevant public interest considerations as well as the objectives of relevant stakeholder

The governance arrangements that apply to the ACSS are those that apply more broadly to Payments Canada as an organization.

These arrangements are prescribed and outlined in the CP Act, regulations made under the act and Payments Canada bylaws and rules. These instruments are publicly available and provide a high level of clarity and transparency around Payments Canada’s objectives, lines of responsibility within the board of directors and management, accountability and oversight; and the interaction with stakeholders and the public. The CP Act also specifically invests Payments Canada with the responsibility to “promote the efficiency, safety and soundness of its clearing and settlement systems and take into account the interests of users” in pursuing all objects of the association. In addition, the PCS Act, which applies to the ACSS, contemplates that the

supervision and regulation of clearing and settlement systems (as an essential element of the financial system in Canada) is predicated on the need to control risk and promote the efficiency and stability of the financial system in Canada.

The Payments Canada board of directors consists of an independent chair, the president and CEO, seven independent directors (including the chair) and five member directors. Domestic systemically important banks are represented by at least two and a maximum of three directors.

Under the CP Act, Payments Canada by-laws that relate to the administration of the Payments Canada may be approved by the board of directors. All other Payments Canada by-laws are subject to approval by the Minister of Finance, who also has the authority to review new Payments Canada rules or amendments to

existing rules and, if appropriate, disallow the whole or part of a rule.

The Minister also has the power to issue a directive including a directive to make, amend or repeal a by-law, rule or standard.

The PCS Act gives the Bank of Canada responsibility for overseeing clearing and settlement systems for the purpose of controlling systemic risk or payments system risk. Payments Canada's ACSS has been designated as prominent payment system under this act, so Payments Canada is also subject to oversight from the governor of the Bank of Canada for the ACSS. The Bank of Canada settles the positions among ACSS participants, which have settlement accounts with the Bank of Canada, and supports settlement by providing secured loans or advances to direct participants with short positions in their settlement accounts.

Payments Canada employs industry best practices in governance through various policies to increase efficient and effective decision making within its legislative framework. Roles and responsibilities around risk management and reporting of risk are clearly defined in

Payments Canada's Enterprise Risk Management (ERM) Policy and Risk Profile. Payments Canada also employs strong practices that ensure accountability to its users and the public, through its engagement with SAC and MAC, its member and stakeholder survey in addition to its communications strategy.

Risk management governance starts with the Payments Canada board of directors. Also contributing to the work of Payments Canada is the SAC and the MAC, which provide advice and expertise to the board of directors on payment, clearing and settlement issues.

The board of directors has 5 sub-committees: the Human Resources and Compensation Committee, the Governance and Nominating Committee, the Audit and Finance Committee, the Technology and Modernization Committee and the Risk Committee.

The Executive Leadership Team's (ELT) responsibilities for oversight of risk management are met through an internal risk committee (IRC). The committee is comprised of all members of the ELT.



Standard 3: Framework for the comprehensive management of risks

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

Risk is the uncertainty that surrounds future events and outcomes. As such, it is inherent in all we do and, therefore, risk management is critical to Payments Canada fulfilling its core purpose, vision and strategic plan.

Payments Canada has a formal risk management process that is overseen by the board of directors, implemented by management and executed by all in Payments Canada. The board of directors-approved Enterprise Risk Management Policy and Framework sets out the roles and responsibilities for risk management and governance. Payments Canada follows a lines-of-defence approach, which distinguishes among three groups or lines required to support effective risk management. The first line of defence is the business units that perform day-to-day risk management – the functions that own and manage risks of relevance to their area of responsibility. The second line performs oversight functions and includes risk management oversight and compliance. The third line provides independent assurance and includes internal and external audit and other independent assurance providers.

The ERM program is based on the ISO 31000 standard and is heavily influenced by the Financial Stability Board (2013) “Principles for an Effective Risk Appetite Framework” and the Office of the Superintendent Financial Institutions (2013) “Corporate Governance Guideline.”

The objective of Payments Canada’s ERM is to support decision-making in achieving Payments Canada’s core purpose, vision and strategic plan by managing all key risks across the organization in a comprehensive and integrated way. In doing this:

- All staff have a framework to confidently

identify and manage risks in their day-to-day activities;

- ELT can confidently and effectively identify, understand and manage risk across Payments Canada and is able to provide assurance of this to the board of directors; and
- The board of directors can confidently provide oversight of risk management.

In terms of the organization itself, Payments Canada continues to mature its risk management practices as set out in the ERM Policy, approved by the board of directors in early 2015 and reviewed every two years.

The following principles anchor Payments Canada’s ERM:

- Risk management is enterprise-wide and done in an integrated way.
- Risk management supports decision-making.
- Risk management is dynamic.
- Risk management requires accountability and transparency.
- Risk culture is imperative to success.

It is Payments Canada policy to manage risk in accordance with a risk appetite approved by the board of directors. To do this, Payments Canada develops strategies to mitigate risk (probability, impact and velocity) and maximizes the positive effects of strategic opportunities. The board of directors, President and Chief Executive Officer, Chief Risk Officer, ELT and Payments Canada personnel and committees all play a role in this process.

Payments Canada has several mechanisms for assessing and reporting on its risks throughout

the year: the risk profile is reviewed quarterly by the IRC; an operational report for ACSS and LVTS is provided to the Bank of Canada

quarterly; and Payments Canada management performance in managing risk is assessed each year in an annual risk report;

Standard 4: Credit risk

A PPS should effectively measure, monitor and manage its credit exposures to participants and those arising from its payment clearing and settlement processes. A PPS should maintain sufficient financial resources to cover its credit exposure arising from the default of the participant and its affiliates that would generate the largest aggregate credit exposure for the PPS in extreme but plausible market conditions.

The ACSS model, as a deferred netting system, exposes ACSS participants to credit risk. With every batch entry to the ACSS application, a credit risk is generated and this risk is implicitly borne.

The risk materializes in the event a direct clearer in the ACSS defaults on its obligation to other participants in the system. More specifically, when a direct clearer owing funds to the Bank of Canada is not able to meet its settlement obligation when due.

The ACSS model is an uncollateralized system. Any defaulting direct clearer's shortfalls are shared between survivors on a pro-rata basis, which ensures the systems settlement at the end of the cycle, and subsequent opening for the next cycle. This obligation is legally enforced in the ACSS By-law and rules. More information regarding the framework for default can be found in standard 9 on participant-default rules and procedures. The objective of the default framework is to ensure the system settles, while also reducing uncertainty for Payments Canada members and stakeholders, and the risk of a negative impact on the reputation of Payments Canada, the Canadian payments system and Payments Canada members.

Payments Canada understands the nature of credit risk that can emerge in the ACSS model, and it communicates this knowledge and expertise to members via sound research and member and committee engagement.

ACSS rules encompass other arrangements to constrain credit risk in the event of a default including the obligation for members to:

- i. give notice to each of its branches, internal departments and all indirect clearers for which it acts as clearing agent, to immediately stop accepting, for clearing purposes, all Items drawn on, payable by or payable to, the defaulting direct clearer and
- ii. immediately "block" each of its systems or processes that exchange payments with the defaulting direct clearer.

Other incentives provided for in the CPA by-laws and rules for the management and containment of risk, include:

- Clearing agents can apply a minimum balance and/or collateral requirements on indirect clearers to help limit their credit risk exposures to indirect clearers. This creates an incentive for indirect clearers to act responsibly to limit the collateral requirements and costs.
- Clearing agents can provide short notice to indirect clearers that will allow them to cease providing services under prescribed conditions that relate principally to financial and operational risk avoidance. This creates an incentive for indirect clearers to satisfy the terms of their arrangements so as to minimize risk for the clearing agents.
- Indirect clearers are permitted to use

multiple clearing agents directly or indirectly to help diversify operational and financial risk concentration. This limits switch costs for indirect clearers between clearing agents and encourages clearing agents to satisfy the terms of their arrangements with indirect clearers and act responsibly and prudently in their operational and financial dealings with the indirect clearers.

In late 2016 Payments Canada developed a plan and timeline for an interim solution to include a requirement for collateral in the current ACSS model. In consultation with members and with

the Bank of Canada the Interim Credit Risk Model (ICRM) was developed to collateralize, ex-ante, the ACSS model to cover credit exposure arising from the single largest default. The ICRM will enter into force once the legal framework is finalized.

In concert with Modernization of the ACSS, the SOE will ensure that the risk model and the system design will meet requirements in the most efficient and effective way possible. The information required to facilitate monitoring and managing of liquidity risk will be considered as part of the requirements.

Standard 5: Collateral

A PPS that requires collateral to manage its credit exposure or the credit exposures of its participants should accept collateral with low credit, liquidity and market risks. A PPS should also set and enforce appropriately conservative haircuts and concentration limits.

The ACSS model is an uncollateralized system; the Standard is therefore not met since the requirement to cover the single largest credit exposure with a high degree of confidence using collateral is not addressed in the current ACSS model.

The ICRM framework, by requiring collateral, will address the requirement.

The collateralization requirements of the system will be such that participants will be required to individually pledge to the Bank of Canada appropriate securities that together have a value sufficient to cover an inability to settle by the participant with the largest single settlement obligation with a high degree of confidence.

The Bank of Canada will determine the list of securities (including haircuts²) that are eligible to be pledged as collateral for ACSS operations. The list of eligible collateral consists primarily of securities that are issued or guaranteed by the

Government of Canada or a provincial government. The list of eligible securities also includes other securities that meet minimum credit rating requirements as determined by the Bank of Canada. The Bank of Canada accepts high-quality securities as collateral. The Bank of Canada periodically reviews its collateral policy and can make changes in response to market developments, new financial instruments or financial conditions.

ACSS direct clearers will be required to sign the appropriate legal documentation in the Bank of Canada's form, granting security in the assets pledged as collateral. The Bank of Canada may choose to register its security in the personal property security registries of the appropriate jurisdictions. The Bank of Canada also needs to be assured that its security is registered in the personal property registry of the participant's home jurisdiction, thereby giving the Bank of Canada a first priority security interest.

The Bank of Canada provides a collateral

management system, the High-Availability Banking System (HABS), which combined with other related systems and process controls, ensure that only eligible collateral is accepted. Many of the eligible securities under the policy are pre-approved by the Bank of Canada, including the appropriate pricing. Any securities that are not pre-approved are reviewed on a security-by-security basis against the eligibility criteria before they can be pledged to the Bank of Canada.

Collateral is valued by the Bank of Canada at market value less a discount (haircut¹³), which depends on the type of asset, its maturity, and credit rating. The Bank of Canada imposes prudent haircuts to account for volatility of market pricing. Principally, haircuts are determined on a through-the-cycle approach, using a sample of historical data that account for periods of high volatility.

Standard 6: Liquidity risk

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

Payments Canada itself does not act as a liquidity provider or bear liquidity risk. The ACSS model is an uncollateralized system; no collateral is required to cover credit risk, therefore no liquid resources are maintained to effect settlement following the default of one of its participants.

Tools used by participants are a combination of manual and automated monitoring and reporting.

The implementation of the ICRM and therefore the requirement to cover the single largest credit exposure with a high degree of confidence using collateral addresses the requirement to maintain liquid resources to effect settlement.

In concert with Modernization of the ACSS, the SOE will ensure that the risk model and the system design will meet requirements in the most efficient and effective way possible. The information required to facilitate monitoring and managing of liquidity risk will be considered as part of the requirements.

Standard 7: Settlement finality

A PPS should provide clear and certain final settlement by the end of the value date. When necessary, or preferable, a PPS should provide final settlement intraday or in real time.

The ACSS By-law and rules clearly outline when settlement takes place, how settlement will be effected, and the responsibilities of direct clearers, clearing agents and indirect clearers.

The ACSS By-law and rules also address when settlement is final and the risk of revocable items.

¹³ The percentage by which the market value is reduced for the

purpose of calculating collateral levels.

Of particular relevance is the following:

ACSS Cycle

- The ACSS operates on a cycle, from 11:00 ET on one business day to 11:00 ET the next business day.
- Payments Canada rules specify the initial and final closing times for the ACSS cycle, as well as cut-off times for making ACSS entries. Settlement of the ACSS clearing balances is effected on the books at the Bank of Canada at the end of each ACSS cycle.
- Final ACSS clearing balances are struck at 11:00 ET on settlement date and are provided to the Bank of Canada.
- Typically, payments with a value date of “T” will settle at the close of the ACSS cycle corresponding with T, which will be the next business day (“T+1”) around 11:00 a.m.

Finality of settlement

- The ACSS clearing balances of direct clearers are settled on the books at the

Bank of Canada following the close of each applicable ACSS cycle. In accordance with the ACSS By-law, settlement at the Bank of Canada is final and may not be reversed under any circumstances.

Typically, in the current ACSS model, payments with a value date of “T” will settle at the close of the ACSS cycle corresponding with T, which will be the next business day (“T+1”) around 11:00 a.m. Although not a requirement of Payments Canada or the Bank of Canada, all direct clearers in the ACSS are also direct participants in the LVTS and thus have access to intra-day collateralized credit from the Bank of Canada in the LVTS, which can facilitate ACSS settlement in the rare event that the institution has problems issuing an LVTS payment (i.e., SWIFT or Direct Network problems) to meet its ACSS settlement obligation.

With the modernization of the ACSS, the SOE will ensure that the system design would meet requirements in the most efficient and effective way possible. Exceptions for final settlement by the end of the value date would be allowed where it is technically infeasible (i.e., cheques) provided there are compensating controls (such as guarantees using collateral and/or other equivalent financial resources until settlement).

Standard 8: Money settlements

A PPS should conduct its money settlements in central bank money when practical and available. If central bank money is not used, a PPS should minimize and strictly control the credit and liquidity risk arising from the use of commercial bank money.

The ACSS model uses claims on the Bank of Canada for settlement purposes. In accordance with the ACSS By-law, each direct clearer and group clearer is required to maintain a

settlement account on the books of Bank of Canada specifically for the purpose of settling its multilateral net position.

Standard 9: Participant default rules and procedures

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

The legal framework for ACSS participant default is set out in the ACSS By-law and rules.

The ACSS By-law clearly defines the circumstances of participant default and outlines the formula for determining the additional contribution for surviving direct clearers.

The default of a direct clearer is defined in the ACSS By-law as a shortfall in the settlement account at the Bank of Canada that would preclude settlement.

The amount of the shortfall corresponds to the defaulter multilateral net debit position. Upon receiving notice from the Bank of Canada that a direct clearer or group clearer is in default, the direct clearers and group clearers that are not in default and the Bank of Canada shall each

deposit into the defaulting direct clearer's or group clearer's settlement account the amount of their additional contribution.

In the past Payments Canada has not tested the default procedures to confirm its readiness to implement the default rules and procedures.

Starting in 2017, testing of the default functionality in ACSS will be conducted annually. Results of the exercise, including gaps and lessons learned, will be shared with ACSS participants, Payments Canada management, and the Bank of Canada. Payments Canada, in line with its Business Continuity Policy, will continue to evolve the scope and complexity of these tests.

Standard 10: General Business Risk

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

The board of directors-approved ERM Policy sets out the roles and responsibilities for risk management and governance. Payments Canada follows a lines-of-defence approach (for more information please see Standard 3). General business risk follows the structure instituted in the ERM Policy. Payments Canada identifies and monitors its general business risks through various mechanisms, including the risk profile, the Internal Risk Committee, business continuity program, security program, and implementation of the technology strategy.

Since Payments Canada is not funded by equity, there is no requirement for Payments Canada to calculate the amount of liquid net assets funded by such equity to cover general business losses. To cover losses, Payments Canada has at its disposal the following funds to maintain financial and operational strength and viability in severe stress scenarios.

General Reserve Fund:

- This fund was established by the board of

directors in 2004. In the first few years, amounts for reserve were included in its costs when establishing Payments Canada's operating and capital budgets. In addition, the majority of the surplus funds realized in a fiscal year have been allocated to the general reserve.

Restricted Reserve Fund:

- The purpose of the fund is to support continued operation and services of the ACSS and the LVTS in the event that it incurs a general business loss. The fund was established to cover six months of operating costs in the event of a significant business interruption.

The board of directors' Audit and Finance Committee reviews and recommends any changes to the reserve funds and how those funds will be raised (i.e., a one-time special assessment to members) or built up through regular contributions from members. These changes are approved by the board of directors. Payments Canada also purchased property and casualty insurance.

Payments Canada's investment policy sets out that liquidity and safety of principle are the key investment criteria for reserve funds. Payments Canada does not hold resources designated to cover the default of a member. Participants pledge collateral to the Bank of Canada to cover their default.

Standard11: Custody and investment risks

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

Payments Canada holds its cash in a chartered Canadian bank that is regulated by the Office of the Superintendent of Financial Institutions (OSFI) and insured through CDIC.

Payments Canada's investment policy ensures that Payments Canada's investment strategy is consistent with overall risk-management strategy and that liquidity of investments and safety of

principal are adhered to. Payments Canada has adopted a very strict investment policy that limits its investment selection to Government of Canada Treasury Bills. The investment policy is reviewed on a regular basis by the Audit and Finance Committee and approved by the board of directors.

Standard 12: Operational risk

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

Payments Canada employs a framework of policies and procedures for the ACSS, supported by the ACSS By-law and rules, which work to

identify and mitigate the impact of operational risks. The framework, founded upon industry and cross-industry standards on security and risks, as

well as Canadian and international standards and best practices, includes Payments Canada's Enterprise Risk Management Policy, Business Continuity Program and an operational report provided to the Bank of Canada.

The system design of ACSS incorporates various controls and clearly defines roles, procedures and incentives to manage and contain operational risks. This framework and its associated policies and procedures are reviewed and tested regularly disaster recovery and business continuity plan exercises.

There are arrangements to ensure participants are aware of operational risks they might incur through participation in the system. In particular:

- ACSS Rule B9 - Manual Balancing for the Purpose of Settlement – this rule outlines procedures applicable in the event of a National Failure of the ACSS necessitating manual balancing for the purpose of settlement in all ACSS regions.
- Manual balancing tests for the ACSS are conducted 4 times per year – each region (total 6 regions) completes a manual balancing test four times per year.
- ACSS Rule J7 contains the procedures to be followed in a force majeure situation (e.g. an event beyond the control of an institution

such as a natural disaster).

- Also, there are specific contingency arrangements in place for disruptions of the Electronic Data Interchange (EDI) and the Automated Funds Transfers (AFT) systems.
- In addition, the ACSS/USBE Service Level Description, also indicates that direct clearers are required to ensure that dedicated primary and backup workstations are available for ACSS entries.

Operational reliability is provided through the ACSS availability commitments imposed on both participants and Payments Canada and the technical competency requirements expected of participants. Security and reliability is provided by Payments Canada's maintenance of a secondary data centre for the ACSS, from which Payments Canada may resume operations within four hours in the event of a disruption at its primary data centre.

Payments Canada's performance in meeting its operational objectives is assessed annually in the corporate scorecard. Improving resiliency and security of the LVTS and ACSS was the top operational priority for 2017. The first phase of this work was to improve our disaster recovery capability.

Standard 13: Access and participation requirements

A PPS should have objective, risk-based and publicly disclosed criteria for participation that permit fair and open access.

Access starts with the membership. All chartered banks operating in Canada, as well as the Bank of Canada, are required by legislation to be members of Payments Canada. Trust and loan companies, credit union centrals, and other deposit-taking institutions as well as life insurance companies, securities dealers, and money market mutual funds are eligible for

membership if they meet requirements set out in the by-laws.

ACSS rules outline the requirements and obligations applicable to direct clearers, clearing agent and indirect clearers.

To become a direct clearer in the ACSS, a

Payments Canada member must: (i) be a deposit-taking institution or securities dealer; (ii) have a settlement account and standing loan facility at the Bank of Canada; (iii) process 0.5% of the total national clearing volumes in the ACSS; and (iv) meet the technical and other requirements outlined in the by-laws and rules.

Whereas the volume criterion may not be a

proxy for financial capacity, it serves as a convenient mechanism to limit size of the group, which is important in terms of managing system risk efficiently and building trust among direct participants.

Participation requirements will be reviewed in conjunction with new risk model the SOE design will provide.

Standard 14: Tiered participation arrangements

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

The ACSS By-law specifies the formally tiered structure for access to the ACSS; it establishes the participant status of direct clearers, group clearers, indirect clearers, members of a group and clearing agents.

Payments Canada currently leverages self-reporting of basic information on indirect participation for dues calculation purposes; the information gathered is not currently used to identify, monitor or manage risk arising from tiered participation. While it is unlikely that any material risks would affect the PPS itself, there

may be risks to participants and end-users of the ACSS arising from tiered participation arrangements.

In concert with Modernization, Payments Canada will enhance the framework to identify, monitor and manage material risks arising from tiered participation arrangements, as well as the process to gather basic information on volume and value that will be required. Payments Canada will consider approaches that will meet the requirements in the most efficient and effective way possible

Standard 15: Efficiency and effectiveness

A PPS should be efficient and effective in meeting the requirements of its participants and the markets it serves, with a particular consideration for the interests of end-users

The ACSS model is designed to meet the needs of its participants: (i) ACSS application and rule changes are reviewed in conjunction with members and rule amendments are subject to Ministerial approval which ensures the changes are in line with Payments Canada public policy objectives; (ii) feedback on changes is sought and received from members through the Senior Operational Committee (SOC); (iii) the SAC is a forum for receiving feedback from stakeholders

not represented in the aforementioned committees; and (iv) Payments Canada engages in public consultations for any large-scale changes (e.g. adoption of ISO 20022).

Payments Canada regularly gauges customer satisfaction in terms of effectiveness and efficiency by conducting member and stakeholder surveys, the results of which are shared with the board of directors. Payments Canada also completes a corporate scorecard,

which provides a simple and effective evaluation of Payments Canada's operational efficiencies and organizational successes. The scorecard measures Payments Canada system availability rates, financial results, and progress on

achieving strategic milestones. Operations reports and scorecard performance are reviewed quarterly by the Payments Canada board of directors, and the scorecard framework is reviewed annually.

Standard 16: Communication procedures and standards

A PPS should use communication procedures and standards that meet common industry practices and use or accommodate relevant internationally accepted communication procedures and standards to facilitate efficient payment clearing, settlement and recording.

ACSS participants exchange information for clearing and settlement by manual entries in the ACSS application. Payment items are exchanged between participants in accordance with rules and standards established in the ACSS model.

and supporting the new standard in Canada. The ACSS does not engage in cross-border operations.

The ISO 20022 standard is currently available for selected payment stream and is not mandatory.

In February 2016, Payments Canada completed the multi-year development of new ISO 20022 payments messages, related rules and standards, and an adoption strategy for its participant financial institutions. Going forward, the next phase of Payments Canada's ISO 20022 initiative will focus on the multi-year task of implementing

Within Modernization project, to ensure that the adoption of ISO 20022 is considered holistically across pillars, Payments Canada is currently developing a cross pillar strategy that is due to be delivered at the end of fall 2017.

Standard 17: Disclosure of rules, key procedures and market data

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

The ACSS is supported by a comprehensive framework of rules and procedures, supported by federal legislation, which are publicly available on Payments Canada's website or on the Members Portal. All changes to rules and procedures are carried out in consultation with member committees and are subject to board of directors and government approval.

dated when changes affect the document. This includes the ACSS Service Level Description and the ACSS User Guide. There are arrangements to ensure participants are aware of operational risks they might incur through participation in the system.

The operational and technical procedures are comprehensive and well documented and up-

Statistics on value and volume are available on the Payments Canada website. This is the first publicly disclosed ACSS self-assessment that Payments Canada has completed.

Standard 18: Recovery plans

A PPS is expected to identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. This entails preparing appropriate plans for its recovery or orderly wind-down based on the results of that assessment.

The ultimate objective for recovery planning is to enable Payments Canada to continue provision of critical services when its viability as a going concern is threatened. Achieving this objective requires assessing and documenting recovery options, which would be available to Payments Canada in severe stress situations.

Payments Canada has at its disposal two reserve funds to cover losses: the general reserve fund and the restricted reserve fund to cover losses and maintain financial and operational strength and viability in severe stress scenarios. Payments Canada's legislative framework also delineates which recovery resources are available to Payments Canada to restore financial and operational strength and viability in severe stress scenarios.

CPA Bylaw No. 2 – Finance (changes to budgets) establishes that Payments Canada has the ability to initiate a special dues assessment against the membership if additional funding is required. The process would take approximately two months.

The CP Act, Section 17, subject to by-laws, states that the board of directors may borrow money on the credit of Payments Canada; issue, reissue, sell or pledge debt obligations of Payments Canada; mortgage, pledge or otherwise create a security interest in all or any property of Payments Canada owned or subsequently acquired to secure any obligation of Payments Canada.

The affairs of Payments Canada may only be wound up by Parliament.

Appendix I: Acronyms

ACSS	Automated Clearing Settlement System
AFT	Automated Funds Transfers
CDIC	Canada Deposit Insurance Corporation
CDS	Canadian Depository for Securities
CP Act	Canadian Payments Act
CPMI	Committee on Payments and Market Infrastructures
CSN	CPA Services Network
DNS	Deferred Net Settlement
EDI	Electronic Data Interchange
ELT	Executive Leadership Team
ERM	Enterprise Risk Management
FMI	Financial Market Infrastructure
HABS	High-Availability Banking System
IOSCO	International Organization of Securities Commissions
IRC	Internal Risk Committee
LVTS	Large Value Transfer System
MAC	Member Advisory Council
OSFI	Office of the Superintendent of Financial Institutions
PCS Act	Clearing and Settlement Act
PFMI	Principle for Financial Market Infrastructure
PPS	Prominent Payments System
SAC	Stakeholder Advisory Council
SOE	Settlement Optimization Engine
SWIFT	Worldwide Interbank Financial Telecommunication
USBE	US Dollar Bulk Exchange

Appendix II: List of publicly available resources

Payments Canada General Information

Governance	: https://www.payments.ca/about-us/governance-risk
Member Advisory Council	: https://www.payments.ca/about-us/how-we-collaborate/member-advisory-council
Stakeholder Advisory Council	: https://www.payments.ca/about-us/how-we-collaborate/stakeholder-advisory-council
Payments Canada Clearing and Settlement Systems	: https://www.payments.ca/about-us/our-systems-and-rules
Membership	: https://www.payments.ca/our-directories/member-financial-institutions

Payments Canada Modernization

General information	: https://www.payments.ca/modernization
Modernizing Canadian Payments: A Vision for the Canadian Payments Ecosystem	: https://www.payments.ca/sites/default/files/vision-canadian-payments-ecosystem_edited.pdf
Roadmap & High Level Plan	: https://www.payments.ca/sites/default/files/roadmap_whitepaper_en.pdf

Acts and bylaws

Canadian Payments Act	: http://laws.justice.gc.ca/eng/acts/C-21/page-1.html
Automated Clearing Settlement System (ACSS) Rules	: https://www.payments.ca/about-us/our-systems-and-rules/retail-system/rules-and-standards
Payments Canada Membership Requirements Regulations	: http://laws.justice.gc.ca/eng/regulations/SOR-2001-476/index.html
CPA By-law No. 1 - General bylaw	: http://laws.justice.gc.ca/eng/regulations/SOR-2003-174/index.html
CPA By-law No. 2 - Finance	: http://laws.justice.gc.ca/eng/regulations/SOR-2003-175/index.html
CPA By-law No. 3 - Payment Items and ACSS	: http://laws.justice.gc.ca/eng/regulations/SOR-2003-346/index.html
CPA By-law No. 6 - Compliance	: http://laws.justice.gc.ca/eng/regulations/SOR-2003-347/index.html
CPA By-law No. 7 - Respecting the Large Value Transfer System	: http://laws.justice.gc.ca/eng/regulations/SOR-2001-281/index.html
CPA By-law No. 8 - Administration	: https://www.payments.ca/sites/default/files/by-law-8-administration_0.pdf

Statistics

Automated Clearing Settlement System	: https://www.payments.ca/about-us/our-systems-and-rules/retail-system/statistics
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