Guideline

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This Guideline sets out prudential considerations relating to the liquidity risk management programs of federally regulated deposit-taking institutions and bank holding companies. In this Guideline, the term "institution" means banks, all federally regulated trust and loan companies, and bank holding companies.

Subsection 485(1) and 949(1) of the *Bank Act* (BA) and subsection 473(1) of the *Trust and Loan Companies Act* (TLCA) require banks, bank holding companies, and trust and loan companies, respectively, to maintain adequate and appropriate forms of liquidity. However, the liquidity risk management principles set out in this guideline provide the framework within which the Superintendent assesses the content and effectiveness of the liquidity risk management of a bank, bank holding company or a trust and loan company and whether that risk management program is producing adequate and appropriate forms of liquidity pursuant to the Acts. Notwithstanding that a bank, a bank holding company or a trust and loan company may meet these standards, the Superintendent may by order direct a bank or bank holding company to take actions to improve its liquidity under subsection 485(3) or 949(3), respectively, of the BA or direct a trust and loan company to take actions to improve its liquidity under subsection 473(3) of the TLCA.

A. Introduction

Liquidity refers to the capacity of an institution to generate or obtain sufficient cash or its equivalent in a timely manner at a reasonable price to meet its commitments as they fall due and to fund new business opportunities as part of going-concern operations. Liquidity risk is the potential for losses to be incurred from holding insufficient liquidity to survive a contingent stress event, whether name-specific or market-wide in origin. This guidelineThis guideline builds upon the principles enunciated in the Basel Committee on Banking Supervision's *Principles for Sound Liquidity Risk Management and Supervision* (September 2008). In the following text, the numbering of the respective OSFI principles is sequential; however the numbering featured in the BCBS paper is also provided (in brackets) for ease of reference. describes some of the elements that will be considered by supervisors in assessing the strength of an institution's liquidity risk management framework and describes some of the information that will be used to assess liquidity adequacy as appropriate to the scale, complexity and function of the institution.

This guideline should be read in conjunction with OSFI's Liquidity Adequacy Requirements (LAR) Guideline, which contains the methodology underpinning a series of quantitative standards and liquidity metrics used by OSFI to assess the liquidity adequacy of an institution.

OSFI expects all institutions to maintain the infrastructure and risk management control function capacity to identify, measure, manage and monitor liquidity risk exposures under hypothetical stressed outcomes and maintain structurally sound funding and liquidity profiles. This expectation is in line with the fundamental principle for the management of liquidity risk noted below.

> OSFI recognizes that institutions have different liquidity risk management practices depending on their: size; organizational structure; nature, scope, and complexity of operations; corporate strategy and risk profile.

OSFI Principle #1 *(BCBS Principle #1): An institution is responsible for the sound management of liquidity risk. An institution should establish a robust liquidity risk management framework that ensures it maintains sufficient liquidity, including a cushion of unencumbered, high quality liquid assets, to withstand a range of stress events, including those involving the loss or impairment of both unsecured and secured funding sources.*

In particular, OSFI expects institutions to have:

- a stated tolerance for liquidity risk that is reflected in documented liquidity and funding policies, business strategies, reporting frameworks, risk management and control functions;
- a suitable framework for the ongoing identification, measurement, management and monitoring of contingent liquidity requirements including:
    - the capacity to conduct hypothetical analyses of changes to funding requirements under combinations of extreme but plausible name-specific and market-wide stress scenarios; and

    - the maintenance of a cushion of high quality, unencumbered liquid assets to be held against identified funding requirements under stress;

- formally documented contingency funding plans that reflect outcomes generated from liquidity risk stress testing programs;
- a framework for assigning the costs and benefits to the internal use and provision of liquidity;
- a funding strategy that assures diversification of funding sources across several dimensions such as products, tenors, legal entities and business lines and critically assesses the fungibility of foreign currencies;
- a methodology to manage intra-day liquidity risk; and
- arrangements for public disclosure of liquidity positions, risks and the commensurate risk management practices undertaken.

B. Governance, Risk Tolerance and Liquidity Policies

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectation of institution Boards of Directors in regards to operational, business, risk and crisis management policies.

OSFI Principle #2 *(BCBS Principle #2): An institution should clearly articulate a liquidity risk tolerance that is appropriate for its business strategy and its role in the financial system.*

The liquidity risk tolerance, which should define the level of liquidity risk that the institution is willing to assume, should ensure that the institution prudently manages its liquidity in normal times such that it is able to withstand a prolonged period of stress. The risk tolerance should be articulated in such a way that all levels of management clearly understand the trade-off between risks and profits. OSFI recognizes that there are many ways – both qualitative and quantitative – in which an institution can express its liquidity risk tolerance and, as such, will assess the appropriateness of the institution's risk tolerance framework in light of its business strategy and role in the

financial system.

OSFI Principle #3 *(BCBS Principle #3): Senior management should develop a strategy, policies and practices to manage liquidity risk in accordance with the risk tolerance and to ensure that the institution maintains sufficient liquidity. Senior management should continuously review information on the institution's liquidity developments and report, as appropriate, to the board of directors.*

The stated liquidity risk tolerance should be consistent with the size, sophistication, business objectives, relevant funding markets and overall risk appetite of the institution. Further, it should represent a baseline for operationalizing the institution's liquidity strategies, policies, risk management and control functions. The liquidity risk tolerance should be reviewed at least annually and the ensuing liquidity management process or strategy reviewed more frequently.

Senior management should be responsible for establishing and implementing well documented, sound and prudent liquidity management and funding policies. An institution's documented liquidity policies, which collectively articulate the importance senior management places on liquidity and its use in achieving business objectives, should be communicated and understood at all relevant levels of the organization. In particular, these policies should capture decisions around:

- the degree of centralization of liquidity management;
- asset, liability and off-balance sheet instrument composition;
- funding source diversification;
- quantitative regulatory minimums in relevant jurisdictions;
- processes for determining, reviewing, approving and applying stress test scenarios and related assumptions;
- the size and composition of a stock of liquid assets that is available to generate cash in a stress environment;
- contingency funding plans;
- intraday liquidity management;

- management of collateral including pledgingSee OSFI Guideline B-11 *Pledging: Prudential Limits and Restrictions*. and apportionment; and
- limit setting, the process for escalating exceptions and review of applicability.

Attention by supervisors will be paid to assessing the appropriateness and suitability of these policies in the context of the institution's stated liquidity risk tolerance. That assessment will also rely on reports by management to relevant committees along with any independent reviews of the institution's compliance with policies and controls, as conducted by either internal or external audit processes.

Senior management should ensure that the institution has adequate internal controls and clearly identifies its delegates for managing liquidity risk. To avoid potential conflicts of interest, senior management should strive for adequate separation of responsibilities in key elements of its risk management processes. Institutions should have liquidity risk identification, measurement, monitoring and control functions with clearly defined responsibilities. The Chief Risk Officer (CRO) or the equivalentFor small, less complex FRFIs, the chief risk officer (CRO) role can be held by another executive of the FRFI (i.e., the executive has dual roles). In these cases, the dual role must not compromise the independence required of the CRO. Refer to OSFI's *Corporate Governance* guideline for details. independent risk management function (i.e. the second line of defenceRefer to OSFI's guideline on *Operational Risk Management*, which outlines a three lines of defense model.) should provide sufficient independent oversight of the first line of defence.

As appropriate, institutionsFor small, less complex FRFIs, in place of establishing a separate committee or forum, senior management should be satisfied that it has the collective skills, time and information (i.e., appropriate reporting) to effectively manage liquidity and funding risk. should establish a committee or equivalent cross-functional forum to oversee liquidity and funding risk management. Such committees or forums would be responsible for managing and vetting the strategic direction of liquidity and funding risk (such as positions and policies) within the institution. To the extent that specific risk management personnel take on this role of overseer and form part of this committee or forum, these specific personnel are expected to be impartialThe risk management function should retain its challenge function and maintain its independence. In cases were the contingency funding plan (CFP) is the primary liquidity crisis management instrument, risk management should

have the ability to invoke the CFP as necessary. under normal operating conditions and thus should not actively participate in tactical decisions under normal operating conditions regarding liquidity and funding risk position taking.

OSFI Principle #4 *(BCBS Principle #6): An institution should actively monitor and control liquidity risk exposures and funding needs within and across legal entities, business lines and currencies, taking into account legal, regulatory and operational limitations to the transferability of liquidity.*

Institutions with operations in several countries and currencies have generally organized enterprise liquidity management in a centralized manner. Where appropriate, the institution may have to apply some degree of decentralization to its banking operations. Irrespective of the approach employed, head office management should retain the ability to monitor and control enterprise-wide liquidity across appropriate time horizons.

Having an international presence or activities in multiple currencies implies that the treatment of assets, liabilities and off-balance instruments is necessarily more complex. In a stressed environment (including a dislocation in foreign exchange swap markets and/or currency settlement or, possibly, unexpected price volatility that increases currency mismatches), an institution may not always be able to mobilize domestic liquidity to meet foreign currency funding requirements or vice versa. Consequently, an institution should document its management of foreign currency positions in its liquidity policies when foreign currency funding or asset denomination, in aggregate, represents more than 5% of total funding or total assets. In addition to developing processes for sustaining continuous access to liquidity for all legal entities in the event of a funding shortfall, this policy should describe:

- any limits (e.g. fungibility, credit) established between operating units;
- any internal liquidity support arrangements (i.e., intra-group transfers) that may be provided; and
- how the institution's policies address potential transferability constraints that are imposed by host regulators.

Where applicable, the institution is responsible for providing documentation of legal opinions on the soundness of these arrangements.

In the ordinary course of business, an institution must decide how domestic or foreign currency cash flow and funding needs will be met as liquidity might not be fungible or portable under a stress contingent event. Internal information systems should have the capacity to be able to account for sensitivities in changes in liquidity of foreign currency swaps markets and fungibility of funding currencies. Where cash flow mismatches in an individual currency are deemed to be material, the policy on gap limits with respect to that individual currency should be addressed in the overall foreign currency liquidity policy.

Foreign bank branches licensed to operate in Canada are not subject to the LAR Guideline requirements and are instead expected to conform to group risk management policies and risk appetites as established by the legal entity abroad and supervised by the home supervisor in accordance with the principles for liquidity risk management established by the BCBS. However, as host supervisor, OSFI may require quantitative reporting by foreign bank branches on their operations in Canada as they pertain to the liquidity of the branch in Canada and its degree of ongoing reliance on its head office.

C. Measuring, Managing and Monitoring Liquidity

OSFI Principle #5 *(BCBS Principle #5): An institution should have a sound process for identifying, measuring, monitoring and controlling liquidity risk. This process should include a robust framework for comprehensively projecting cash flows arising from assets, liabilities and off- balance sheet items over an appropriate set of time horizons.*

A sound framework for identifying, measuring, managing and monitoring sources and uses of liquidity and the commensurate risk should have several dimensions including, among other items:

- a rigorous and comprehensive liquidity measurement program that is integrated within the liquidity management strategy and contingency funding plans of the institution. Components of such a program should include the combination of:
    - a process for measuring and reporting pro-forma funding requirements through the projection of contractual and contingent cash flows;

- the capability and capacity to generate projected cash flows over a sufficiently long period of time, with a suitable frequency of timing depending on circumstances, and the flexibility to modify underlying assumptions as needed;
- the ability to measure liquidity in the material currencies in which the institution conducts business – both on a subsidiary / branch basis in all material jurisdictions in which the institution is active and on an aggregate group basis; and
- maintenance of a stock of high-quality unencumbered liquid assets that can be converted under stress conditions into cash inflows without incurring undue losses;

- a contingency funding plan that addresses stress testing result outcomes and is effective at managing any elevation of funding and market liquidity risk;
- processes around:
  - internal limit setting and controls consistent with the institution's articulated risk tolerance,
  - risk-taking incentives of individual business lines to ensure they are aligned with the liquidity risk exposures, whether structural or contingent, they create for the institution; and
  - managing access to a diversified set of funding sources and tenors;
- systems requirements and the necessary personnel to ensure timely measuring, monitoring and reporting of liquidity positions against limits to senior management for appropriate action and response; and
- the ability to aggregate risk data in a way that is accurate and reliable under normal and stress conditions. Where an institution relies on manual processes and desktop applications (e.g. spreadsheets, databases), it should have effective mitigants in place (e.g. end-user computing policies and procedures) and other effective controls that are consistently applied across the institution.

D. Stress TestingIn addition to the guidance offered in this section, institutions are expected to comply with the requirements outlined in OSFI's Sound Business and Financial Practices Guideline E-18, *Stress Testing*.

OSFI Principle #6 *(BCBS Principle #10): An institution should conduct stress tests on a regular basis for a variety of short-term and protracted institution-specific and market-wide stress scenarios (individually and in combination) to identify sources of potential liquidity strain and to ensure that current exposures remain in accordance with its established liquidity risk tolerance. An institution should use stress test outcomes to adjust its liquidity risk management strategies, policies, and positions and to develop effective contingency plans.*

OSFI expects institutions to develop a comprehensive liquidity stress testing program that considers multiple scenarios of varying degrees of stress and time horizons. Evaluating whether an institution has sufficient liquidity depends greatly on the behaviour of cash flows under different conditions; however, the supervisory assessment of an effective stress testing program will focus on the institution's design of extreme but plausible scenarios that capture elements of the following, where materially relevant to the institution:

- name-specific events (for example, those based around events causing the loss of wholesale funding access, inability to draw on commitments from other entities, need to pledge additional collateral due to a multi-notch downgrade, requirement to repurchase securitized assets, and/or honour non-contractual obligations to mitigate reputational risk);
- market-wide disruptions (for example, those based around events that might cause a mass flight to quality assets or a re-pricing of market or investor risk appetite); and
- combinations of the above items.

In designing stress scenarios institutions should explore stressors based on severe but plausible events that may differ from historical experience at the institution or from that observed in the market.

The outcomes of such stress test exercises should be compared against the stated risk tolerance of the institution; integrated into management decisions including limit setting and internal transfer pricing systems; and affect the design of contingency funding plans, including the determination of action plans to deal with events of liquidity stress allowing for the rapid escalation of information and implementation of a coordinated tactical response by an institution to the liquidity stress. Senior management should decide how to incorporate the results of the stress tests in assessing and planning for potential liquidity shortfalls in the institution's contingency funding plan. To the extent that projected funding deficits are larger than implied by the institution's liquidity risk tolerance, senior management should consider whether to adjust its liquidity position or to bolster its contingency plan.

A common objective among all liquidity stress tests is the assessment of impact caused by the realization of contingent liquidity risks embedded in an institution's balance sheet and funding profile. Such assessments should consider both contractual and legal requirements to meet unexpected funding obligations. For institutions with foreign currency liquidity policies, the stress testing exercise should consider additional scenarios that assess the impact of a disruption to material cross-border funding channels and/or currencies. In addition, it is critical that an institution utilize stress testing to assess the reputation impact that failing to meet non-contractual and revocable liquidity obligations would represent to the institution.

Assessing the severity of estimated funding gaps or shortfalls and appropriate management response requires an institution to further consider, among other things, the:

- size and timing of the gap relative to total funding;
- current level of actual stress (whether name-specific or market-wide) relative to the modelled level of stress;
- diversity of funding sources available to meet that shortfall; and
- size of the stock of high-quality, unencumbered liquid assets relative to the gap.

Results from scenario tests should be reported to senior management monthly and, as appropriate, to the Board of Directors.

Measurement

Institutions should rely on forward looking measures of prospective liquidity for the determination of funding requirements under stress and document key assumptions used to project future cash flows. The tool often used for projecting forward looking cash flows under stress conditions (but also normal times) is the maturity ladder. For stress testing purposes it can determine, for various time buckets, the combination of normal contractual-based cash flows and behaviourally modified cash flows arising from stress scenario assumptions.

A number greater than zero in any particular time bucket represents a net cash inflow whereas a number less than zero is a net cash outflow. This process can be repeated over a series of adjacent time buckets (which are usually quite granular in the short-term and then coarser past one month) enabling the institution to identify (depending on assumptions) funding gaps, or net outflows, within any future time period. A net cumulative stressed outflow position at any future time bucket can be ascertained by adding the net flow positions from all earlier time buckets.

Behavioural assumptions under stress

Unlike other risk models that rely on recent historical data, contingent cash flows arising under stress are often low probability events with potentially large funding implications. Consequently, an extra degree of conservatism should be applied to the design of these assumptions (e.g., assigning later dates to cash inflows and earlier dates to cash outflows when uncertainty exists or other assumptions).

For each secured and unsecured funding source, an institution should make behavioural assumptions about whether each liability with an arriving contractual maturity would need to be repaid or would be partially or fully rolled over. For liabilities without contractual maturities or having embedded options that would reduce the effective term, the institution should design a schedule for run-off assumptions over the relevant stress horizon. To the extent an institution relies on secured funding, assumptions should be made about capacity for the funding market to continue to roll over in an environment where the institution's creditworthiness may be in question.

With regard to inflows to the institution, behavioural assumptions should be consistent with the institution's assessment of internal contingent decisions towards reducing, maintaining or increasing business line activity as part of normal course of business under a relevant contingency funding plan.

For off-balance sheet instruments subject to contingent liquidity risks additional behavioural assumptions are critical and should be unique to a particular business funding model. For example, institutions active in the sponsorship of securitization vehicles may face contingent liquidity risks from: legal obligations to provide liquidity backstop arrangements for asset backed commercial paper issued by the conduit; early amortization in the case of revolving credit vehicles; and situations where there is no legal obligation to provide funding (e.g., the assets in the underlying vehicle are from major clients of the sponsoring institution). Other contingent funding obligations that might arise under stress that should be considered include but are not limited to:

- the funding impact of a multi-notch rating downgrade on collateral requirements;
- irrevocable and revocable credit lines to other legal entities or persons;
- potential funding obligations arising from issued bankers' acceptances, other guarantees and trade finance; and
- possible implications of market volatility or credit deterioration impact on margining agreements.

The degree of sophistication of liquidity and funding risk measurement techniques should be commensurate with the degree of risk inherent in the institution. Where institutions utilize models to measure and mitigate their liquidity and funding risk exposure, model governance should be consistent with OSFI Guideline E-23, *Enterprise-Wide Model Risk Management for Deposit-Taking Institutions*.

Stock of liquid assets

OSFI Principle #7 *(BCBS Principle #12): An institution should maintain a cushion of unencumbered, high quality liquid assets to be held as insurance against a range of liquidity stress scenarios, including those that involve the loss or impairment of unsecured and typically available secured funding sources. There should be no legal, regulatory or operational impediment to using these assets to obtain funding.*

To satisfy potential funding gaps, institutions should maintain a diverse stock of high quality, unencumbered assets that are liquid (e.g., they are traded in broad and active secondary markets and can be demonstrated to be liquidated through their sale, or pledged through a repurchase agreement at all times, to a wide range of

counterparties without incurring a substantial discount). In addition, these assets should share the common characteristics of, but are not limited to, instruments that are eligible at central banks for open market operations and marketability. These conditions are necessary in order to assure their status as dependable sources of cash flow under a diverse set of stress contingencies. The stock of liquid assets should be designed in order to ensure continuous compliance with both internal stress tests and any prescribed regulatory stress test requirements.

Adequacy of the stock of liquid assets

The purpose of this stock of liquid assets is to provide the institution with a source of available funds to meet normal and contingent cash flow needs as determined from stress testing outcomes so that the institution has the necessary time to:

- access alternative sources of funding, upon initiation of a contingency funding plan, provided circumstances giving rise to a liquidity problem are temporary; and
- survive a name-specific and/or market-wide liquidity stress event until other longer term measures or solutions can take effect.

In general, the stock of liquid assets buffer component will be of greater significance for institutions or business lines that have greater reliance on short-term unsecured wholesale funding in contrast to institutions whose funding base is primarily non-brokered retail deposits in its orientation. Demonstration of counterbalancing capacity (e.g., the ability to raise unsecured funds, draw on commitments, call loans or access new secured funding sources in the short term) will not be considered a sufficient substitute to the maintenance of an adequate stock of liquid assets.

Factors to consider when determining how appropriate the stock of liquid assets is relative to the institution's liquidity risk profile include:

- the stability of funding sources – institutions relying on less 'sticky' forms of deposits, engaging in securitization of the illiquid portion of its asset pool and/or using wholesale unsecured funding sources should hold a larger stock of liquid assets;

- the cost and diversity of funding – institutions with higher funding costs compared to similar peers and/or those that rely on a limited number of funding sources (e.g. concentrated with a limited number of counterparties, tenors, etc.) and/or those that rely on third-party brokered deposits, should hold a larger stock of liquid assets;
- short-term funding requirements – institutions with a funding mix geared towards shorter term maturity liabilities should hold a larger stock of liquid assets;
- contingent funding needs;
- the degree of integration of liquidity management with that of a parent deposit-taking institution as well as the financial strength of the parent; and
- the regulatory regime of the country in which the parent institution is located.

The liquidity policies of an institution, therefore, should clearly define the role of the stock of liquid assets within the overall liquidity management system (including a methodology for classifying, ranking and adjusting the liquidity value of assets) and establish minimum targets for holdings of liquid assets.

Liquidity Value

Part of the consideration in determining the adequacy of the stock of liquid assets is the assignment of liquidity values to particular asset classes. Such values represent an assessment of the possible discounts an institution may face in selling down or borrowing against its stock of liquid assets to meet a funding shortfall. Such an assessment should reflect the period of stress. Liquidity values should be more conservative than, for instance, the more generalized haircuts associated with collateral pledged to meet margining requirements. Liquidity values should be re-assessed by senior management annually as part of the normal review process of the appropriateness of the institution's stress testing program. However, a process should exist to revisit and update liquidity values with greater frequency in periods of market-wide stress.

Factors to consider when determining liquidity values or haircuts (e.g. dollar and time value to the haircut) given the institution's liquidity risk profile include:

- The quality of the asset – instruments that tend to be more easily liquefiable or repoable during many forms of stress scenarios are likely candidates. Often, there is a link between credit quality of the reference asset and its marketability.
- The structure of the market for the asset – an active number of market participants with transparent price discovery enhances the potential liquidity value of an asset.
- Diversity within the stock of liquid assets – capacity to liquidate or repo particular assets can vary depending on the scenario for reasons outside of the institution's control. Concentration in the stock of liquid assets should result in lower liquidity values. This is even more of an issue if the assets need to be liquidated in a narrow market.
- The presence of any legal or practical encumbrance to the sale or borrowing against the asset.

Encumbrance

OSFI Principle #8 *(BCBS Principle #9): An institution should actively manage its collateral positions, differentiating between encumbered and unencumbered assets. An institution should monitor the legal entity and physical location where collateral is held and how it may be mobilised in a timely manner.*

When determining which assets can be included in a stock of liquid assets (including clearly assigning a liquidity value to each), an institution's policies should also consider the existence of encumbrances that would prevent a quick sale to meet unanticipated net cash outflow requirements. This means, for example, that assets normally pledged to secure specific obligations – like advances to settle payments in a large value payment system, overnight advances from a central bank, or margin requirements on an exchange, central counterparty or bilateral margining agreement – should not be considered part of the stock of liquid assets available to meet unexpected net cash outflows. Re-assessments of actual encumbrance and the potential for assets making up the stock to become encumbered (for instance, the impact of a ratings trigger on collateral demands arising from some bilateral derivatives counterparty netting agreement or an exchange margining requirement) should also be conducted. If such assessments cannot be conducted the institution should hold a larger stock of liquid assets or impose lower liquidity values to compensate for uncertainty of encumbrance.

OSFI expects institutions to comply with OSFI-mandated internal policies on the pledging of assetsRefer to OSFI's Guideline B-11 *Pledging*. . Institutions should actively monitor their pledging and apportionment of assets to clearing and settlement organization, as part of their ongoing liquidity management program. Pledges of assets for these purposes require special focus because they can involve encumbrances on an intra-day basis that are typically released at the end of a settlement cycle. To the extent that these assets are included in an end of day measure of liquidity, they should be separately identifiedFor the purpose of calculating liquidity metrics that are required by OSFI (LCR, NCCF), assets encumbered on an intra-day basis can be counted toward the stock of high quality liquid assets provided they are effectively "freed-up" at measurement time, which is typically at end-of-day. .

Other measures

Cash flow measures (generally) are the basis for identifying (contingent or structural) funding mismatches. In addition an institution should utilize measures to assess structural imbalances between its illiquid assets and sources of long term funding. Institutions should also understand any potential concentrations in wholesale funding (e.g., reliance on any single entity or group and the implications if that entity/group removed its funding).

Institutions should not rely on one individual measure or stress scenario. An institution should first and foremost select measures of liquidity risk in a manner that is consistent with its overall business model, risk tolerance and risk management strategy. It is on that basis that supervisors will assess the institution's capacity to measure liquidity risk.

In addition to institutions' internal liquidity stress testing programs, OSFI may require the calculation of certain metrics, such as:

- The Liquidity Coverage Ratio (LCR), a common stress measure outlined in Chapter 2 of the LAR Guideline. The LCR aims to ensure that an institution has an adequate stock of unencumbered high quality liquid assets that consist of cash or assets that can be converted into cash with little or no loss of value in private markets in order to meet its liquidity needs for a 30 day calendar day liquidity stress scenario. The measurement of the LCR is designed under an OSFI-definedOSFI's LCR standard builds on the Basel Committee on Banking Supervision framework, *Basel III: The Liquidity Coverage Ratio* – June 2013. stress scenario where the

assumptions are prescribed on liquidation values of assets and cash flows.

- The Net Stable Funding Ratio (NSFR), a common measure for select institutions that is used to assess structural imbalances between their assets and sources of long term funding, as outlined in Chapter 3 of the LAR Guideline. The measurement of the NSFR is designed under assumptions of the liquidity value of assets and stability of liabilities and capital, as prescribed by OSFIOSFI's NSFR standard builds on the Basel Committee on Banking Supervision framework, *Basel III: The Net Stable Funding Ratio* – October 2014. .

- The Net Cumulative Cash Flow (NCCF), a common survival horizon metric for select institutions that is outlined in Chapter 4 of the LAR Guideline. The NCCF quantifies the length of time before an institution's cumulative net cash flow turns negative, once factoring in its stock of available liquid assets. OSFI may, as necessary, require individual institutions to meet a supervisory-communicated, institution-specific NCCF level. In such instances, the level will be set by OSFI after considering the trend in financial market funding, liquidity indicators and institution-specific liquidity metrics and risks. The measurement of cumulative net cash flows is designed under an OSFI-defined idiosyncratic stress scenario where the assumptions on liquidation values of assets and contingent cash flows are prescribed by OSFI.

E. Contingency Planning

OSFI Principle #9 *(BCBS Principle #11): An institution should have a formal contingency funding plan (CFP) that clearly sets out the strategies for addressing liquidity shortfalls in emergency situations. A CFP should outline policies to manage a range of stress environments, establish clear lines of responsibility, include clear invocation and escalation procedures and be regularly tested and updated to ensure that it is operationally robust.*

An institution's ability to withstand liquidity disruptions (whether name-specific or market-wide) can depend on the calibre of its formal contingency plans. A CFP represents an institution's strategy for handling a variety of prospective liquidity stress events with the goal of maintaining market confidence and franchise value. Effective CFPs should consist of several components:

- a set of quantitative and qualitative early warning indicators (EWI), designed with the aid of stress test results, that identify the emergence of increased risk or vulnerabilities to an institution's liquidity risk position or potential funding needs. EWIs should include triggers that would cause an assessment and potential response by management to mitigate the institution's exposure to the emerging risk and, if necessary, initialize a formal application of the CFP. The responsibility for monitoring EWIs should be clearly assigned and the frequency of monitoring and the escalation process should be defined, documented, and commensurate with the speed at which a degradation of the EWI may signal a deterioration of the institution's liquidity position. EWIs and triggers should be reviewed and discussed with senior management regularly to ensure they remain relevant. Examples of EWIs may include, but are not limited to:
    - rapid asset growth, especially when funded with less stable sources of funding;
    - growing concentration in assets or liabilities;
    - repeated incidents of positions approaching or breaching internal or regulatory limits;
    - increases in currency mismatches;
    - deterioration of the institution's financial conditions (e.g. earnings, asset quality, credit rating, increased spreads and funding costs, increased collateral requirements);
    - deterioration in market indicators that are correlated with the financial condition of the institution;
    - deterioration in the financial viability of peer institutions that could make the institution susceptible to contagion risk; and
    - negative publicity (including monitoring social media activities);
- a menu of options for dealing with name-specific stress events, and / or market-wide stress events at multiple horizons;
- specific procedures and reporting requirements to ensure timely and uninterrupted information flows to senior management with potential for escalation;

- clear division of roles and responsibilities within management and procedures for the stress event in question;
- a plan for altering on-balance sheet asset and liability behaviours (e.g., market assets more aggressively, sell assets that were intended to be held, lengthen maturities of liabilities and raise interest rates on deposits) and use of off-balance sheet sources, with consideration of the time to execute;
- an indication of the priority of alternative sources of funds (e.g., designating primary and secondary sources of liquidity), including an assessment of the time required to access each source of funding and any operational hurdles and a hierarchy of liquidity consuming activities;
- a mechanism to track and monitor eligible collateral to secure back up emergency liquidity facilities (either from private sources and/or central banks);
- a classification of borrowers and trading customers according to their importance to the institution in order to maintain customer relationships; and
- plans and procedures, including key contacts, for communicating with stakeholders (e.g. creditors, shareholders, counterparties, custodians and correspondents), employees, supervisors, the media and clients/public.

Contingency plans should include procedures for making up cash flow shortfalls in emergency situations. The plan should spell out as clearly as possible the sources of funds an institution expects to have available from various sources.

Institutions are required to notify OSFI upon the initialization or de-escalation of a CFP. Further communication demands of the supervisor will be treated on a case-by-case basis. Beyond this, the degree of prescription, relative to flexibility, in its plans is left to the institution to determine.

The development, and ongoing maintenance, of CFPs should be integrated within the institution's program for stress testing liquidity risk and informed by the stress test results. In other words, potential action plans outlining the process for the escalation of the CFP can come from the output of stress tests and, further, if a scenario is

designed where the CFP would need to be invoked, then assumptions should reflect this.

CFPs should be reviewed and tested regularly to ensure effectiveness and operational feasibility, with the results of such tests reported to senior management at a minimum annually. If an institution is decentralized in its liquidity risk management, either by jurisdiction or currency, and has multiple CFPs for different entities, it should assess the degree of overlap in order to ascertain any duplication, discrepancy or omissions. CFPs should reflect the organizational complexity of the institution and, in the event the institution is dependent on funding in foreign markets, should undertake critical contingency planning to maintain ongoing funding at the sub-consolidated level where relevant.

F. Internal Controls and Incentives

OSFI expects that institutions will have systems in place such that senior management is able to review compliance with established liquidity risk management policies, control liquidity risk exposure and evaluate risk tolerance through the use of limits, funding targets and early warning indicators. The limit setting and compliance framework(s) should be calibrated to the results of the institution's stress testing program with the goal of being able to continue operations as a going-concern. Limits should also be operationally effective and appropriately calibrated in accordance with the institution's stated liquidity risk tolerance (e.g. not set so high that they are never triggered). Clearly articulated and documented policies should describe procedures for dealing with limit exceptions, permissions or authorization to set and change limits, notification responsibilities and escalation procedures, sign-off by senior management, and remedial follow-up and/or disciplinary actions.

In order to ensure the integrity of information reporting, OSFI expects an institution to establish a framework whereby monitoring of performance against limits is conducted by parties that are operationally independent of funding areas and other business units. Such personnel should be competently trained and have the information system capabilities to monitor whether liquidity risk remains within the bounds set by senior management. This framework should be subject to regular review as part of the general internal audit process.

Incentives through funding costs and benefits

OSFI Principle #10 *(BCBS Principle #4): An institution should consider liquidity costs, benefits and risks in the internal pricing, performance measurement and new product approval process for all significant business activities (both on- and off-balance sheet), thereby aligning the risk-taking incentives of individual business lines with the liquidity risk exposures their activities create for the institution as a whole.*

For purposes of measuring business performance and maintaining proper incentives, all institutions should have the capacity to assign a liquidity cost or benefit to different business activities, including new products, in terms of funding requirements, risks or provisions. Internal pricing programs are expected to be commensurate with the size and complexity of the institution. Larger and more sophisticated organizations are expected to incorporate the cost and benefits of liquidity into internal funds transfer pricing programs. Such a program should charge business lines the cost of funding all material activities in terms of consumed and contingent liquidity, and credit business lines that bring in liquidity at a cost that is below the market funding rate of that institution. Particular consideration should be given to assigning a value to contingent liquidity needs whether as a cost, in cases such as potential draw downs from commitments, or as a benefit, as such is provided by holdings of liquid assets kept on standby to meet potential draws. Further, in designing new products, where meaningful, a reputation assessment should be made of potential draws on liquidity beyond contractual and/or legal obligations. Such effects should either be priced directly into the product or assigned a cost to the business unit reflective of the additions to the stock of liquid assets required to meet contingent liabilities.

Dependencies on unsecured money market wholesale funding

Where reliance on money markets for unsecured wholesale funding in Canadian currency and/or total foreign currency is greater than 5% of total funding or total assets in Canadian and total foreign currency respectively, OSFI expects an institution to have:

- strong monitoring and control processes;
- internal limits based on, for example,:

    - a granular set of short-term bucket (e.g., next day, 2-7 days and 8-30 days) funding requirements;
    - unsecured money market wholesale funding sources; and
    - fungible currencies;
- documentation supporting the rationale for assigning internal liquidity values ascribed to stock of liquid assets;
- well-articulated and senior management-approved assumptions around foreign currency fungibility; and
- system capacity to actively measure, monitor and report actual requirements against those limits internally at a daily frequency.

Wholesale sources of funding are often more sensitive to name-specific and market-wide stress conditions and, consequently, limits are necessary for more volatile sources of funds. Limits on short-term funding requirements should be consistent with an institution's demonstrated capacity to fund in the wholesale market at a reasonable price. Where appropriate, these limits should apply on a total currency basis and, where material, by currency or currency group. Based on the institution's organizational structure, internal limits on short-term funding requirements should also be established between legal entities or geographic markets, where appropriate.

G. Managing Market Access

OSFI Principle #11 *(BCBS Principle #7): An institution should establish a funding strategy that provides effective diversification in the sources and tenor of funding. It should maintain an ongoing presence in its chosen funding markets and strong relationships with funds providers to promote effective diversification of funding sources. An institution should regularly gauge its capacity to raise funds quickly from each source. It should identify the main factors that affect its ability to raise funds and monitor those factors closely to ensure that estimates of fund raising capacity remain valid.*

Careful design of diversification strategies among funding sources should improve the capacity of the institution to survive a variety of name-specific and market-wide stress scenarios, even beyond necessarily what a best practice stress testing program can identify. Such a design should be complemented with rigorous limit setting practices,

where deemed appropriate, since breaches can represent a good indicator of emerging funding gaps. Building strong relationships with providers of funding outside the institution's corporate group can provide a line of defence in liquidity management. The frequency of contact and the frequency of use of a funding source are two possible indicators of the strength of a funding relationship and hence its reliability.

OSFI expects an institution to periodically review its efforts to maintain the diversification of liabilities, to establish relationships with liability holders, and to develop asset-sales markets. It should establish an ongoing presence in different funding markets and monitor market developments to take anticipatory action such as lengthening its funding profile. As a check for adequate diversification of liabilities, an institution needs to examine the level of reliance on individual funding sources by instrument type, tenor, provider of funds, currency and geographic market, and set internal limits on the maximum amount of funds it will accept in the normal course from any one counterparty or any one funding market (e.g., asset backed commercial paper). Further, an institution should identify potential correlations between similar funding sources or markets for funding concentrations under stress.

Developing markets for asset sales or exploring arrangements under which an institution can borrow against assets is another element of managing market access. The frequency of use of some asset-sales markets is a possible indicator of an institution's ability to execute sales under adverse scenarios. Institutions should not assume that new funding arrangements around asset sales will exist under periods of stress for which it has not maintained a history of repeated access. Further, institutions should review their asset-backed funding programs not only for quality and diversity of reference assets but also on the basis of overall complexity of instruments in order to limit exposure to changes in investor preferences if cash flows are difficult to assess.

Institutions using originate-to-distribute business models rely on securitization markets as a source of continual funding. Since securitization markets often become unreliable during stressed periods, active institutions should also consider limits on the size of its loan inventory pipeline, maturity of paper issued by different vehicles and potential for early amortization. Limits on other sources of contingent liquidity risk (e.g., loan commitments, liquidity facilities) should extend beyond contractual obligations to consider the reputational considerations of providing funding.

H. Intraday Liquidity Risk

OSFI Principle #12 *(BCBS Principle #8): An institution should actively manage its intraday liquidity positions and risks to meet payment and settlement obligations on a timely basis under both normal and stressed conditions and thus contribute to the smooth functioning of payment and settlement systems.*

Intraday liquidity risks have become more pronounced as the capacity of, and degree of automation in, payment and settlement systems has increased. Institutions should understand the liquidity implications of a payments system disruption and have contingency plans to manage around it. Institutions should design stress scenarios that reflect such events and use the outcomes as a basis for construction of a contingency plan including, potentially, the development of back-up service arrangements to avoid cashflow bottlenecks. If an institution is reliant upon bilateral credit (e.g., correspondent or tiered payment services) and/or deferred net settlement systems to make time-critical payments it should understand the contingent collateral requirements of being forced, in a name-specific event, to switch to real-time gross settlement or equivalent methods.

Chapter 6 of the LAR Guideline introduces liquidity monitoring tools for select institutions. Although the scope of application of the tools is limited to direct clearers, all institutions are expected to comply with Principle 12 to actively manage their intraday liquidity positions and risks to meet payment and settlement obligations on a timely basis.

I. Public Disclosure

OSFI Principle #13 *(BCBS Principle #13): An institution should publicly disclose information on a regular basis that enables market participants to make an informed judgement about the soundness of its liquidity risk management framework and liquidity position.*

An institution should disclose sufficient information regarding its management of liquidity risk to enable relevant stakeholders to make an informed judgement about the ability of the institution to meet its liquidity needs. This information could include:

- the organisational structure and framework around the management of liquidity risk;

- the roles and responsibilities of the Board of Directors, senior management and delegated committees in the design and operation of that framework;
- the degree of centralization in its global liquidity risk management practice and how that degree impacts on funding activities, limit setting and intra-group lending strategies;
- an articulation of liquidity risk tolerance and a demonstration of how compliance with that tolerance is assessed;
- the inclusion of quantitative measures such as the composition and size of the stock of liquid assets and a description of the assumptions employed;
- a description of limit setting practices; and
- an overview of stress tests used.