Tool 1: Developing an Effective Capital/Liquidity Plan
Dear Reader,

Welcome to Tool 1 of the ABA Liquidity Toolbox. In the first part of this tool we will develop a capital plan for our case study institution, XYZ Bank. You might ask, “Why include a capital plan in a liquidity toolbox?” Three reasons:

• At the same time the Interagency Guidance on Liquidity and Funds Management was being introduced, we were also facing a still-undefined set of new capital regulations. Nearly everyone will need to build a capital plan to respond to new capital standards.

• If the capital model is properly constructed it will set up goals that can be fed into Tools 2-4 for Core Funding, Near-Core Funding and Non-Core Funding, and asset-based liquidity. This is true whether we are talking about the case study bank or your bank.

• It gives us a nice opportunity to get the issues in the case study of XYZ bank on the table, setting us up for rich discussions as we move through the Tool.

The capital planning model is a free software tool provided by FARIN & Associates included with the Toolbox. It is our hope you will find it to be a useful tool for your own capital planning. You can download it at www.aba.com/LiquidityToolbox.

The second part of Tool 1 identifies the liquidity stress events that would do the most damage to XYZ bank. Hopefully you’ll be following along doing the same for your bank. Why do this in the first Tool? Because, as you work through Tools 2-5, it is our hope you will keep in mind the stress situations you will need to deal with in developing your responses in Tools 2-4 and in developing your contingency funding plan in Tool 5.

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Glossary

**CAMELS** – A regulatory examination rating framework that stands for Capital, Asset Quality, Management, Earnings, Liquidity, and (interest rate) Sensitivity

**Contingent liquidity events** – Unexpected situations or business conditions that may increase liquidity risk

**Credit default spread** – The spread between yields of two financial instruments with essentially identical cash flows, where one instrument is considered free of credit risk (e.g., 5-Year Treasury Bond) and the other carries credit risk (e.g., 5-Year AAA Corporate Bond)

**Credit risk** – The risk associated with borrowers being unable or unwilling to meet their repayment obligations as defined in both loans and securities

**Financial market dislocation** – A situation where market pricing is not commensurate with true risk

**Impact** – The extent of potential damage to the relationship between sources and uses of funds caused by a stress event

**Interest rate risk** – The potential fluctuation in income and market value of financial instruments in a bank’s portfolio brought on by changes in interest rates

**Legal risk** – The risk that arises from the potential that unenforceable contracts, lawsuits, or adverse judgments can disrupt or otherwise negatively affect the operations or condition of a banking organization

**Operational risk** – The risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events

**PCA** – A section of bank regulations that, among other things, sets minimum capital standards for banks to be considered to be well capitalized; stands for Prompt Corrective Action

**Probability** – The likelihood that a stress event will occur

**Rolling planning environment** – A planning environment that looks multiple periods (months, quarters, years) into the future; updated and extended before the planning horizon fully occurred (e.g., rolling strategic plans are often three year quarterly plans, updated annually with the plan extended an additional four quarters)

**Stress events** – Events that have a significant impact on the institution’s liquidity given its specific balance sheet structure, businesslines, organizational structure, and other characteristics; may be caused by an event like a local disaster or Contingent Liquidity Events
The Capital/Liquidity Plan – A Process

The financial crisis that began in 2008 conveyed an important lesson: formidable and complex challenges can only be dealt with by effectively planning for the future in a **rolling planning environment**. The rolling planning environment should incorporate:

- **A Long-Term Horizon** A horizon that looks far enough into the future for an institution to have a reasonable chance of reaching its financial goals. Most institutions should consider a horizon of three to five years.

- **Yearly Goals** A level of aggregation that allows goals to be set for each year of the selected horizon without the strain of being mired in chart-of-accounts level detail in developing the plan.

- **Broad Scope** A scope that incorporates the major measures of financial performance with decisions about top level balance sheet composition.

The principal product that emerges from such a planning environment is the capital/liquidity plan. The plan itself should be simple, so that it is understandable to a wide audience. Three steps will get the planning started:

- **Step 1 Establish long-range financial goals** that optimize the relationship between earnings, capitalization, growth, and dividend policy.

- **Step 2 Develop annual goals** that lead the institution from its current position to its long-range financial goals over an acceptable horizon.

- **Step 3 Plan for contingent liquidity events** that may cause the institution to experience stress.

Throughout the ABA Toolbox on Liquidity we will illustrate the concepts through the case study of a fictitious bank, XYZ Bank. The following pages provide an introduction to this institution.
XYZ BANK CASE STUDY

Capital/Liquidity Plan Issues

XYZ Bank is a locally held community bank organized as a C corporation with $300 million in total assets. Both the city and the surrounding county, are among the fastest growing in the state. The primary stockholder (70% of outstanding stock) and president of XYZ is recently deceased. His stock transferred on his death to his adult children who would like to preserve their father’s legacy but are insisting that the bank deliver a market return on their investment. None of the children works for the bank. None remains in the community. The remaining stock is held by approximately 300 local stockholders. No single stockholder outside the family holds more than 3% of the outstanding stock.

The former CEO was the eldest son of the bank’s founder and principal stockholder. He was a very conservative banker who was more than willing to forgo return for safety and soundness. Asset growth between 2000 and 2005 averaged a moderate, 3-5% per year, in spite of the fact that the market has offered faster growth potential. Traditionally, he kept capital/assets in the 12% range. Driven by aggressive loan growth in the last few years, and recent hits to the Provision for Loan Losses, XYZ’s capital is currently $26.9 million (8.7%). XYZ’s ROA historically ran in the 0.80% range, with ROE in the range of 6-7%. During his tenure, the minority stockholders hadn’t expressed any great dissatisfaction with past returns.

Strategic Direction Changed

In the last two years of his life the CEO was very ill. The responsibility of running the bank fell upon the EVP and senior loan officer, and to the CFO. The CFO was always the counterbalance against the EVP’s more aggressive lending philosophy.

Beginning in early 2006, the EVP’s more aggressive lending approach moved into action. Credit standards were lowered on commercial loans, especially in the commercial real estate sector and land development sector. The city and county are the fastest growing large city and county in the state. The economy is stabilized by a large government and university sector, insurance, and medical. The bank developed relationships with a number of relatively small developers who buy land, develop the land into plats, and sell the platted lots to small builders and consumers wishing to build homes.

Changing Market Conditions

The EVP secured land development relationships with small developers by offering favorable terms and requiring less equity investment than other lenders. As lots were sold, he offered liberal terms to builders when purchasing the developed lots, and provided construction loans to finance the spec-built homes. In addition, he provided land loan financing to consumers who purchased lots and offered bridge loan (home equity line) financing up to 100% LTV once they began to build their homes.

Loans spiked from 66% to 93% of total assets between January 1, 2005 and December 31, 2007, accelerating the bank’s growth rate into the 15-20% range during 2006 and 2007. By mid-2008, home values began to drop after rising steadily for over a decade. Signs began to emerge that the XYZ’s credit risk, which had been almost non-existent through the CEO’s tenure, was beginning to rise. Delinquencies were up. A number of bankruptcies began to cause charge-offs to occur in the consumer loan portfolio, hitting high LTV home equity loans and land loans the hardest. Three land development
loans were classified in early 2009, representing $7.5 million of a $40 million land development portfolio. The borrowers of the remaining land development loans are making payments as agreed, but some are beginning to show signs of stress because of the limited cash flow from their investments.

A number of small builders are also experiencing cash flow problems. Their newly-constructed homes have been on the market unsold for many months and they lack the financial resources to move forward with their next spec-loan project.

Demand for quality loans declined, causing loan portfolios to shrink as existing loans amortized, prepaid, or matured. In the 18-month period from June 2008 to December 2009, loans/assets dropped from 93% to 90%. Hardest hit sectors were C&I, commercial real estate, consumer real estate and home equity, the heaviest concentration of loans in the XYZ portfolio. As a result, some cash is building up in the investment portfolio and pressure on liquidity, which had been significant, began to ease a bit.

The charge-offs and the need to add to provisions for future loan losses caused ROA in 2008 and 2009 to be negative, for the first time in the history of the bank. Losses in the range of 1.0% on assets in the last 18 months have brought capital/assets down to 8.7% from the 12% ratio of only a few years earlier.

**Upcoming Examination**

A safety and soundness exam is around the corner. It is likely that additional loans will be classified, leading to additional negative ROAs in 2010. There is some risk that the losses could take XYZ below the well capitalized threshold under the Prompt Corrective Action (PCA) regulations.

As a result of its rapid growth in the last two years, XYZ’s liquidity position has changed materially.

- The significant loan growth was funded partially out of the investment portfolio, taking it as low as $12 million. It currently stands at $19 million, or 6.5% of assets.
- Only a few years ago there was almost no Near-Core and Non-Core Funding other than CDs over $250,000. XYZ’s current balance sheet shows $107.7 million in Near-Core and Non-Core funds, including $47.4 million in brokered CDs, $43.1 million in FHLB advances, and $17.2 million in CDs with balances in excess of $250,000.
- XYZ’s loan/deposit ratio (including the brokered CDs) currently stands at 108%, well in excess of its 90% policy limit. Management hasn’t been terribly concerned about this issue, as in recent seminars they’ve been told the loan/deposit ratio isn’t an effective measure of liquidity risk. The liquidity policy hasn’t been updated in some time.
Capital/Liquidity Plan Issues

In developing a capital/liquidity plan, the following issues should be addressed, at a minimum:

1. **Keep capital above PCA thresholds.**
   The well capitalized status under the PCA regulations needs to be maintained in order to retain access to a full range of funding sources. Given the heavy asset concentration in 100% risk-weight assets, in order to accomplish this goal, management feels it is essential to keep capital/assets above 8%.

2. **Manage asset quality issues.**
   The plan needs to deal with the likelihood that the upcoming safety and soundness exam will result in additional loans being classified and a negative ROA for the year. A 2010 ROA of -1.0% is within the realm of possibilities.

3. **Prepare for examiner scrutiny of liquidity.**
   Management expects liquidity to be a major issue in the next safety and soundness exam. They expect to be criticized for their low level of asset-based liquidity and their heavy reliance on Near-Core and Non-Core Funding.

4. **Set achievable long-term ROE.**
   The family is focused on ROE. While they are aware of the current performance problems faced by management, they feel achieving a 12% ROE or greater over the long term would be sufficient to allow them to be comfortable continuing their father’s legacy of a locally-based financial institution.

5. **Maintain dividends.**
   Payment of dividends is a priority. Stockholders would like to see payouts in the range of $800,000 per year once the bottom line returns – escalating with increases in income. Historically, dividend payouts have been in the 30-33% range.

6. **Plan for limited access to new capital.**
   The family members have no intention of injecting additional capital into the bank, nor are they interested in having their ownership diluted by an outside capital injection. And, of course, when the industry is suffering, investors are scarce. XYZ didn’t exercise its option to bring in TARP funds at the end of 2008.

7. **Continue sale of mortgages.**
   XYZ does have an active secondary market function. All 15-year and 30-year fixed-rate mortgages that are originated are being sold in the secondary markets with the exception of a few jumbo and non-conforming loans that are written on variable-rate or balloon contracts. Recently, secondary market sales have averaged $10 million a month.
STEP 1 Establish Long-Range Financial Goals

The first step in creating a capital/liquidity plan is to set strategic financial goals you hope to achieve by the end of your planning horizon (up to five years). Goals should be set for all major financial ratios by which you measure your progress:

- Return on Equity (ROE)
- Capital/Assets
- Return on Assets (ROA)
- Dividends/Income
- Organic Capital Growth
- Loan Growth Rate
- Investments/Assets
- Non-Earning Assets/Assets
- Core Funding Growth
- Near-Core and Non-Core Funding/Assets
- Other Liabilities/Assets

All goals for the case study institution are listed in the chart on page 10.

Goal for Return on Equity

The goal-setting process begins with a target for return on equity (ROE). ROE measures how effectively the institution is converting stockholder capital to income. The goal should be set at a level that will satisfy the needs of stockholders and allow the institution to remain viable.

ROE is a good starting point for the goal-setting process for a number of reasons. First, it is one of the measures of performance most important to stockholders. Second, in addition to its relevance to stock institutions as a measure of return, it is also relevant as an organic capital growth rate, net of dividends. This is particularly relevant to mutual financial institutions. A mutual’s primary objective in setting an ROE target is to determine the rate at which it can grow assets without eroding capital/assets. For mutuals, the ROE target should be consistent with an return on assets (ROA) target that allows the institution to receive a 1 or 2 rating for the ‘E’ in the regulatory CAMELS rating system.
Goal for Capital/Assets

Financial institution capital goals represent a trade-off between safety and soundness and return to investors and the ability to grow assets. In setting targets for capital/assets, an institution should be mindful of the risk-based capital requirements and PCA criteria for well-capitalized status. The capital/asset goal should provide sufficient cushion over regulatory minimums and PCA well-capitalized levels to provide for an adequate buffer for contingent events.

XYZ management set its leverage capital/asset goal at 9%. That represents a moderate increase over its current capital ratio of 8.7% and provides a 1% cushion over what management feels is needed to stay above the 10% PCA well capitalized level, given its current balance sheet mix. Some members of the management team wanted to set a goal in the 10% capital/assets range. The need to balance risk and return created a compromise on a 9% goal. As the institution’s major regulatory capital constraint is the risk-based capital minimum – rather than the leverage ratio – a movement of funds from loans to highly liquid unencumbered marketable securities will play a role in easing risk-based capital pressures, allowing a 9 percent capital goal to be comfortably above regulatory minimums. The capital/asset goal appears in Figure 1-1 on page 10.

Goal for Return on Assets

Return on assets (ROA) measures how efficiently an institution is converting its asset base into net income. It is a primary measure used by regulators in setting the rating for ‘E’ in the CAMELS rating system.

XYZ management set its ROA goal to 1.08% (indicated in the “Balanced” column). The 1.08% goal would require a dramatic improvement in the -1.00% ROA posted last year. The 1.08% goal is also well above XYZ’s historical ROA, which ran in the 0.80% range prior to the asset quality problem. The ROA goal appears in Figure 1-1 on page 10.
Goal for Dividends/Income

The dividends/income goal sets the target for the percentage of net income to be paid out to stockholders in income. This goal will vary in stock institutions based on the stockholders’ desire to produce current income on their investments as opposed to receiving the benefits associated with long-term capital growth. For institutions operating as Subchapter S corporations, the dividend payout is likely to be 50 percent of net income or more as the institution’s net income is passed down to the stockholders, who then pay taxes on that income at their personal marginal tax rate. Mutuals set dividend payout at 0 percent of income.

XYZ’s goal for dividend payout is set to 33.33% of net income, based on dividend requirements necessary to keep XYZ’s stockholders happy. The dividends/income goal appears in Figure 1-1 on page 10.

Goal for Organic Capital Growth

Organic capital growth (OCG) is the rate at which capital is grown through retained earnings. It is the speed at which assets can be grown without capital actions while maintaining a constant capital/assets ratio. Capital actions involve adding or removing capital through new capital issues or stock repurchase programs. For most institutions, the organic capital growth rate provides a limit on asset growth over the long term.

The OCG growth rate goal is calculated by the capital planning model automatically using the following formula.

\[ OCG = ROE \times (1 – Dividends/Income) = 12\% \times (1 – 33.33\%) = 8.00\% \]

It is not necessary to set a goal for this ratio, as it is calculated based on the goal for ROE and Dividends/Income and displayed in the “Balanced” column.

For XYZ, an OCG growth rate of 8.00% would allow loan, Core Funding, and asset growth rate above the Vilas era growth rate of 3-5%. An 8% annual asset growth rate is more in line with the growth rate of the bank’s market. The OCG growth goal appears in Figure 1-1 on page 10.
Goal for Loan Growth Rate

The loan growth rate is the annual growth rate of the loan portfolio. For growth to be balanced strategically, the goal for loan growth should be the same as the organic capital growth rate. A loan growth rate higher than the organic capital growth rate would either cause investments/assets to fall below their goal or cause assets to grow faster than capital (unless capital is periodically injected in the institution). A loan growth rate below the organic capital growth rate would either build investments to assets beyond the investment/assets goal or cause the capital/asset ratio to grow beyond the goal, requiring that capital be periodically retired through either a higher dividend payout or by repurchasing stock.

The model calculates and displays the internal capital growth rate in the ‘Balanced’ column next to where the Core Funding growth rate goal is set.

XYZ’s goal for loan growth is set equal to the ‘Balanced’ loan growth goal of 8%, a significant increase from the 0% loan growth rate experienced last year. Once the local economy recovers, a loan growth rate of 8% should be achievable. The loan growth goal appears in Figure 1-1 on page 10.

Investments/Assets Goal

The investments/assets goal specifies what percentage of total assets you would like to maintain in your investment portfolio. In setting this goal, keep in mind the regulatory pressure to increase asset-based liquidity. We’ll be discussing how to set goals for asset-based liquidity – including investments – in Tool 4.

The investment/assets goal for XYZ has been set at 12% of assets. That goal represents a significant increase in investments/assets over the 6.50% investment/assets ratio that existed at the end of the last year. The primary reason for this increase is the likelihood of criticism at the upcoming safety and soundness exam for the level of asset-based liquidity and the resulting pressure to increase investments/assets. This goal will be revisited in Tool 4 with the possibility of revising the goal up or down based on the results of the Liquidity Coverage Ratio (LCR) test run in that tool. The investment/assets goal appears in Figure 1-1 on page 10.
Non-Earning Assets/Assets

The non-earning assets/assets goal specifies the percentage of total assets to be targeted for non-earning assets. This goal should take into consideration normal levels of non-earning assets for the institution. Goals may be lower than current levels due to such a factor as unusually high levels of REO during periods of asset quality problems. Goals may also be lower than current levels if actions such as a significant fixed asset expenditure for branch expansion or a new home office are contemplated in the future.

XYZ's non-earning assets/assets goal is set at 7.0%. This represents a drop from the current level of 8.67% in anticipation of a reduction in REO and other non-earning assets, as XYZ works through its current asset quality problem. The investment/assets goal appears in Figure 1-1 on page 10.

Core Funding Growth Rate Goal

For growth to be balanced strategically, the goal for the growth of Core Funding should be the same as the organic capital growth rate. A Core Funding growth rate faster than the organic capital growth rate would either cause Near-Core and Non-Core Funding to fall below the established goal or cause assets to grow faster than capital, unless capital is periodically injected to keep the capital/assets ratio fairly constant. A Core Funding growth rate below the organic capital growth rate would cause Near-Core and Non-Core Funding to grow beyond the goal or build capital/assets beyond the strategic goal, requiring that capital be periodically retired through either a higher dividend payout or by repurchasing stock.

XYZ's Core Funding growth rate goal equal to the internal capital growth rate of 8%, and exceeds the Core Funding growth rate of 2% for the most recent year. It also exceeds the 3-5% growth rate that had been experienced in the era of the previous CEO. However, with an effective core funding growth strategy that will be implemented in Tool 2, management feels such a core growth objective is feasible. The Core Funding growth goal appears in Figure 1-1 on page 10.
Near-Core and Non-Core Funding/Assets

This goal sets the target for the ideal level of Near-Core and Non-Core Funding to assets. In setting this goal, consider the fact that there is regulatory pressure to reduce industry dependence on Near-Core and Non-Core Funding sources, particularly as capital shrinks and the bank is at risk of dropping below well-capitalized PCA status.

XYZ has 35.91% of total funding coming from Near-Core and Non-Core Funding sources. Its strategic goal is to reduce Near-Core and Non-Core Funding dependency to 20% of assets in order to respond to expected regulatory criticism. The Near-Core and Non-Core Funding goal appears in Figure 1-1 below.

Other Liabilities/Assets

This is a relatively trivial portion of the funding for most financial institutions. Yet, without this goal, the balance sheet wouldn’t be complete. This category is made up of such non-interest paying liabilities such as accounts payable, payroll payable, and the like.

Figure 1-1

<table>
<thead>
<tr>
<th>Strategic Financial Goals</th>
<th>Curr/Rct</th>
<th>Goal</th>
<th>Balanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE</td>
<td>-10.75%</td>
<td>12.00%</td>
<td></td>
</tr>
<tr>
<td>Capital/Assets</td>
<td>8.70%</td>
<td>9.00%</td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>-1.00%</td>
<td>1.08%</td>
<td>1.08%</td>
</tr>
<tr>
<td>Dividends/Income</td>
<td>-13.33%</td>
<td>33.33%</td>
<td></td>
</tr>
<tr>
<td>Organic Capital Growth</td>
<td>-12.18%</td>
<td></td>
<td>8.00%</td>
</tr>
<tr>
<td>Loan Growth Rate</td>
<td>0.00%</td>
<td>8.00%</td>
<td>8.00%</td>
</tr>
<tr>
<td>Investments/Assets</td>
<td>6.50%</td>
<td>12.00%</td>
<td></td>
</tr>
<tr>
<td>Non-Earning Assets/Assets</td>
<td>8.67%</td>
<td>7.00%</td>
<td></td>
</tr>
<tr>
<td>Regulatory Core Growth</td>
<td>2.00%</td>
<td>8.00%</td>
<td>8.00%</td>
</tr>
<tr>
<td>Non-Regulatory Fund/Assets</td>
<td>35.91%</td>
<td>20.00%</td>
<td></td>
</tr>
<tr>
<td>Other Liab/Assets</td>
<td>0.20%</td>
<td>0.20%</td>
<td></td>
</tr>
</tbody>
</table>

Strategic Planning Goals, found in the Capital Plan tab of the Excel workbook, located at www.aba.com/LiquidityToolbox
STEP 2  Develop Annual Goals

After setting longer-term goals, the next step is to develop a meaningful set of annual financial goals that move an institution from its current position in the direction of achieving the strategic financial goals it has established. The two aspects that will have the most impact on the achievement of longer-term goals are Assets and Funding.

In this section we will review more granular asset and funding growth goals and then summarize their potential effect on performance.

Asset Growth Goals

The management of asset growth goals is an iterative process, one that should be tuned as initial targets are discussed.

Three sets of assumptions drive growth in total assets:

- investments/assets
- non-earning assets/assets
- loan growth rate

The charts describing these goals appear in that order in the Capital Plan tab of the Excel workbook found at www.aba.com/LiquidityToolbox. These charts can be used to project year-end investments for each of the five years of a five-year forecast using the annual goals for investments/assets along with the goals set for non-earning assets/assets and loan growth.
Projecting Investments/Assets

XYZ’s strategic financial goal for investments/assets is 12.0%. The strategic financial goal is represented by the dark red line on the graph in the left side of the model. In thinking through how quickly to take Investments/Assets from the current level of 6.5% to the goal of 12%, XYZ management needed to pay attention to the effect of increasing investments/assets on asset growth. For example, the 2.5% increase in the first year of the forecast would cause assets to grow an additional 2.5% unless the concentration of non-earning assets/assets or loans/assets were concurrently reduced. So the decision to increase investments to assets slowly rather than quickly represents a trade-off between potential regulatory pressure to increase investments more quickly and management’s willingness to shrink loans and give up earnings.

Projecting Non-Earning Assets/Assets

XYZ’s strategic financial goal for non-earning assets/assets is 7.0%. The strategic financial goal is the dark red line on the graph in the left side of the model. In thinking through the effect of taking non-earning assets/assets from its current level of 8.67% to the goal of 7.0%, XYZ management needed to pay attention to the effect of modifying non-earning assets/assets targets on asset growth. For example, the 0.83% increase in the first year of the forecast would cause assets to grow an additional 0.83% unless the concentration of investments/assets or loans/assets were concurrently reduced. Because the change in the non-earning assets/assets ratio is a by-product of growth in real estate owned (REO) as the XYZ asset quality problem develops and subsequent shrinkage in REO as the asset quality problem is resolved, management doesn’t feel it has a great deal of control over changes in this ratio. As a single-location institution, options are very limited in reducing non-earning assets/assets unless a sale of the main office is contemplated. Note that over the five years of the forecast, non-earning assets/assets builds from 8.67% to 9.5%, then shrinks to the strategic goal of 7%.
Projecting Loan Growth

XYZ’s management team must manage its asset growth rate by controlling the growth rate of the highest yielding asset – its loan portfolio. Management is projecting a negative ROA of as much as -1.00% in 2010 and -0.25% ROA next year. The losses incurred will shrink capital by as much as 14%. A similar shrinkage in total assets would be required to maintain capital/assets at its current levels. In addition, the effect of growing both investments/assets and non-earning assets/assets would require a greater shrinkage in loans than assets to offset the growth in the two other asset categories.

Given the goals for investments/assets and non-earning assets/assets, a -12% loan growth rate resulted in a -10.3% asset growth rate, taking total assets from $300 million to $269 million in 2010. Because ROA is projected to be negative in 2011, loans need to shrink by an additional 4% in 2011, shrinking assets by an additional 3% in 2011. In 2012-2014, loan growth is gradually brought back on-stream as ROA improves so that by the final year of the plan, loan growth matches the strategic financial goal of 8%.

This raises additional questions for XYZ management:

- How much cash flow can be expected from the existing portfolio due to maturities, amortization, and prepayments? If loans are to be reduced by 12% in Year 1, how should the shrinkage be accomplished?
- Should some categories of loans be cut back or eliminated?
- Should some of the performing mortgages be packaged and sold?

These issues will be addressed as part of the asset-based liquidity discussion in Tool 4.

Figure 1-4

<table>
<thead>
<tr>
<th>Year</th>
<th>Loan Growth Rate</th>
<th>Ending Loans</th>
<th>Ending Assets</th>
<th>Asset Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-09</td>
<td>0.00%</td>
<td>249,218</td>
<td>300,000</td>
<td>0.00%</td>
</tr>
<tr>
<td>Dec-10</td>
<td>-12.00%</td>
<td>219,312</td>
<td>269,094</td>
<td>-10.30%</td>
</tr>
<tr>
<td>Dec-11</td>
<td>-4.00%</td>
<td>210,539</td>
<td>261,215</td>
<td>-2.93%</td>
</tr>
<tr>
<td>Dec-12</td>
<td>2.00%</td>
<td>214,750</td>
<td>267,102</td>
<td>2.25%</td>
</tr>
<tr>
<td>Dec-13</td>
<td>6.00%</td>
<td>227,635</td>
<td>281,031</td>
<td>5.21%</td>
</tr>
<tr>
<td>Dec-14</td>
<td>8.00%</td>
<td>245,846</td>
<td>303,514</td>
<td>8.00%</td>
</tr>
</tbody>
</table>

SFG 8.00%
Funding Growth Goals

After focusing on goals for assets, the next step is to develop goals for funding sources. To this point the projections have remained true to the philosophy that institutions should be asset driven. First, project the growth in total assets. Then determine how to best fund asset growth. In the previous section, projections on growth in total assets were made. In this section, assumptions will be developed that drive growth in the major sources of funding. The funding sources will be approached in this sequence.

- Projecting Core Funding Growth
- Projecting Growth of Other Liabilities as a Percentage of Assets
- Projecting Capital Growth
- Projecting Near-Core and Non-Core Funding Growth

Projecting Core Funding Growth

Over the long term, XYZ expects to balance the growth rates for Core Funding and loan growth, but for the next two years, management is projecting growth in Core Funding at the same time it is projecting shrinkage in loans. This short-term unbalance is for two reasons:

- Expected losses over the next two years will cause capital to shrink. The loss in capital must to be replaced with another form of funding, ideally Core Funding.
- XYZ has set a strategic goal to reduce reliance on Near-Core and Non-Core Funding by a significant amount (35.91% to 20.00% over five years). The only way that can happen is if reductions in Near-Core and Non-Core Funding are replaced with Core Funding.

As can be seen from Figure 1-5, management has projected an increase in Core Funding each year of the forecast, with the growth rate accelerating until the strategic financial goal for Core Funding growth is reached in the last two years of the forecast. Tool 2 is dedicated to Core Funding and follows XYZ as it works on this goal.

Figure 1-5
An institution’s obligations, and the funding sources used to meet them, depend significantly on its business mix, balance-sheet structure, and the cash flow profiles of its on- and off-balance-sheet obligations.

Interagency Policy Statement on Funding and Liquidity Risk

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Projecting Growth of Other Liabilities as a Percent of Assets

XYZ management looked back at historical trends in this ratio, which ran at 0.20%. The strategic financial goal was also set at 0.20% of assets. Management projected it would remain at 0.20% of assets all five years of the forecast.

<table>
<thead>
<tr>
<th>Year</th>
<th>Oth Liab/Assets</th>
<th>Ending Oth Liab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-09</td>
<td>0.20%</td>
<td>589</td>
</tr>
<tr>
<td>Dec-10</td>
<td>0.20%</td>
<td>538</td>
</tr>
<tr>
<td>Dec-11</td>
<td>0.20%</td>
<td>522</td>
</tr>
<tr>
<td>Dec-12</td>
<td>0.20%</td>
<td>534</td>
</tr>
<tr>
<td>Dec-13</td>
<td>0.20%</td>
<td>562</td>
</tr>
<tr>
<td>Dec-14</td>
<td>0.20%</td>
<td>607</td>
</tr>
<tr>
<td>Strat Goal</td>
<td>0.20%</td>
<td></td>
</tr>
</tbody>
</table>
Calculating Ending Capital/Assets

Ending capital in the following sequence:

1. Beginning capital is brought in from Total Capital located in Historical Inputs box of the Capital Plan tab of the Excel workbook located at www.aba.com/LiquidityToolbox.

2. Projected net income is calculated in Figure 1-7.

3. Dividends paid are calculated in the figure by multiplying projected net income by Dividends/Income.

4. Any capital to be injected is entered in the New Capital column of Figure 1-8. Capital buybacks are entered as a negative number.

5. Ending capital equals beginning capital, plus net income less dividends +/- New Capital (Buyback).

Projecting Capital Growth

ROA

XYZ’s ROA projections for 2010 and 2011 consider significant funds being run through the provision of loan loss account, resulting in negative ROAs for both years. In the final three years of the plan, ROA is projected to recover gradually, reaching the strategic financial goal 1.08% for ROA in 2014. XYZ management needs to address how the ROA goals will be achieved.

Dividends

XYZ management plans to suspend dividend payments in 2010 and 2011. Normal dividends, equal to 33.33% of net income, are resumed in 2012 through 2014. There is no new stock issue or stock buyback contemplated in the five years of the plan. The stockholder goal of an $800,000 annual dividend is nearly achieved in year four and exceeded in year five.
Capital/Assets

XYZ's capital/assets ratio jumps from 8.7% to 8.87% in 2010 in spite of a negative ROA in 2010 due to the asset shrinkage strategy that is being forecast. From there it gradually improves throughout the forecast, slightly exceeding the 9% strategic financial goal by posting a 9.03% capital/assets ratio at the end of 2014.

Figure 1-9

<table>
<thead>
<tr>
<th>Year</th>
<th>End Capital/ Assets</th>
<th>Avg Equity Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-09</td>
<td>8.70%</td>
<td>10.75</td>
</tr>
<tr>
<td>Dec-10</td>
<td>8.87%</td>
<td>11.26</td>
</tr>
<tr>
<td>Dec-11</td>
<td>8.88%</td>
<td>11.27</td>
</tr>
<tr>
<td>Dec-12</td>
<td>8.92%</td>
<td>11.24</td>
</tr>
<tr>
<td>Dec-13</td>
<td>9.00%</td>
<td>11.16</td>
</tr>
<tr>
<td>Dec-14</td>
<td>9.03%</td>
<td>11.10</td>
</tr>
<tr>
<td>Strat Goal</td>
<td>9.00%</td>
<td></td>
</tr>
</tbody>
</table>
The agencies expect each financial institution to manage funding and liquidity risk using processes and systems that are commensurate with the institution’s complexity, risk profile and scope of operations.

Interagency Policy Statement on Funding and Liquidity Risk

**Projecting Non-Core and Near-Core Funding Growth**

For XYZ, Near-Core and Non-Core Funding as a percent of assets is projected to decline from a current level of 35.91% of assets to 18.12% of assets over the five years of the forecast. At 18.12% of assets, XYZ would meet its goal of reducing Near-Core and Non-Core Funding to no more than 20% of assets. In making these reductions, XYZ will need to decide which categories will be reduced, while at the same time broadening its sources of Near-Core and Non-Core Funding as a response to regulatory initiatives and in order to reduce its risk associated with any single funding source within the category. These issues will be discussed in Tool 3.

The capital model shows the effect of the assumptions for capital growth, Core Funding growth, and other liability growth on Near-Core and Non-Core Funding as a percent of assets. There is no need for assumptions to be input, as total asset growth is calculated in the loan growth model. The percent of total assets in each of the other funding categories is calculated by the model using the balance projections in Figures 1-5 (Core Funding), 1-6 (other liabilities), and 1-9 (capital). The percentages of Core Funding, other liabilities, and capital are subtracted from 100%. The difference is equal to Near-Core and Non-Core Funding as a percent of assets.

<table>
<thead>
<tr>
<th>Year</th>
<th>NonNr Core Assets</th>
<th>Ending NonNr Fnd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-09</td>
<td>35.91%</td>
<td>107,728</td>
</tr>
<tr>
<td>Dec-10</td>
<td>28.40%</td>
<td>76,420</td>
</tr>
<tr>
<td>Dec-11</td>
<td>23.28%</td>
<td>60,805</td>
</tr>
<tr>
<td>Dec-12</td>
<td>20.10%</td>
<td>53,693</td>
</tr>
<tr>
<td>Dec-13</td>
<td>18.15%</td>
<td>51,000</td>
</tr>
<tr>
<td>Dec-14</td>
<td>18.12%</td>
<td>54,987</td>
</tr>
<tr>
<td>Strat Goal</td>
<td>20.00%</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1-10
Summarize Overall Effect on Performance

After assumptions have been input into the model, it makes sense to review the effect of the asset and funding goals on an institution’s ability to meet its remaining strategic financial goal, ROE. Any time a ratio is calculated by dividing an income statement number by a balance sheet number, the denominator needs to be an average balance sheet number.

Banking is one of the few industries in which there is a focus on the capital/asset ratio. A portion of university finance education focuses on financial leverage, which is calculated by taking assets and dividing by capital. The ratio that is derived by dividing average assets by average capital is often referred to as the equity multiplier, which measures how many dollars of assets are supported by each dollar of capital. The relationship between ROA, ROE and the Equity Multiplier is defined using the following formula.

\[ \text{ROE} = \text{ROA} \times \text{Average Equity Multiplier} \]

The average equity multiplier for each year of the forecast is calculated by taking average assets (beginning assets + ending assets / 2) and dividing by average capital (beginning capital + ending capital / 2).

Projecting ROE

Driven primarily by improvement in ROA, ROE begins at -11.26% in 2010, but improves gradually to 11.98% in 2014, just short of the 12% strategic financial goal. For XYZ, ROE for 2010 (and all subsequent years) is calculated using the following formula. It is displayed in Figure 1-11.

\[ \text{ROE}_{2010} = \text{ROA} \times \text{Avg Eq Mult} = -1.0\% \times 11.26 = -11.26\% \]

Figure 1-11
Changes in Balance Sheet Mix

XYZ’s five-year forecast results in a slight decrease in non-earning assets and a significant increase in the size of the investment portfolio, at a cost to loans as a percent of assets. The shift of funds from loans to investments is likely to cause a drop in yield on earning assets, as yield on investments is likely to be lower than loan yields. Of course, the offsetting advantage gained from this shift is that asset-based liquidity is likely to improve as a result of the strategy. The extent of the impact on yield and the improvement in asset-based liquidity is highly dependent on choices made as to the investments purchased as well as the actions taken to reduce the size of the loan portfolio. Tool 4 will examine this issue in greater detail. The reduction in non-earning assets as a percent of total assets will somewhat offset the yield give-up due to changes in the investment/loan mix, as XYZ will be earning interest income on a greater percent of assets.

On the funding side, capital improves slightly as a percent of assets while other liabilities remained constant as a percent of assets. But as Figure 1-12 shows, there was a significant shift in funding from Near-Core and Non-Core Funding into Core Funding. If this shift is accomplished, it should significantly improve liability-based liquidity by reducing XYZ’s reliance on Near-Core and Non-Core Funding, both vulnerable to stress events. The effect of this funding shift on earnings remains to be seen. The issue of when it makes sense to replace Near-Core and Non-Core Funding with Core Funding and how best to accomplish goals relating to funding mix will be dealt with extensively in Tool 2 and Tool 3.

Figure 1-12 (visible in the Relationships tab of the spreadsheet located at www.aba.com/LiquidityToolbox) shows the changes in both asset mix and funding mix as a result of the strategy being modeled.
STEP 3 Plan for Contingent Liquidity Events

In the Introduction, stress events were defined as events not incorporated in an institution’s base liquidity strategy that cause either sources of funds or utilization of funds to deviate substantially from the assumptions in the base liquidity strategy in a potentially harmful way. The regulatory guidance refers to liquidity events using two terms: contingent liquidity events and stress events.

*Contingent liquidity events* are unexpected situations or business conditions that may increase liquidity risk. Think about contingent liquidity events as those that ultimately could cause a liquidity crisis. In the next section we will provide a list of common contingent liquidity events. Keep in mind that there are potential contingent liquidity events that may not be on the list provided.

*Stress events* are the effect of Contingent Liquidity Events. Or they may be caused by an event like a local disaster. Stress events have a significant impact on the institution’s liquidity given its specific balance sheet structure, business lines, organizational structure, and other characteristics.

The differentiation in the Guidance between these two terms implies that management should review a list of potential contingent liquidity events (causes) and identify those that represent potential stress events that might have a significant effect on the institution. Some contingent liquidity events will not cause stress events for the institution.

There can be a crossover between contingent liquidity events and stress events because some events are both causes and effects. An institution falling below well-capitalized status might be an effect of an asset-quality problem. It may cause some forms of Near-Core and Non-Core Funding to become unavailable.

Because of the crossover of the two terms, rather than try to classify events by type, we will discuss them in sequence using the term “stress events.” We have categorized stress events into three categories: (1) those that are causes; (2) those that are both causes and effects; and (3) cascading events. *This list may not be all-inclusive.* There may be stress events relevant to your institution that are not on this list.
Evaluating Stress Events

Probability and Impact

In reviewing potential stress events and identifying those that apply to an institution, management should also be thinking about the probability of the stress event occurring and the extent of the impact caused by the stress event.

Probability is the likelihood of the event occurring. Impact is the extent of potential damage to the relation between sources and uses of funds caused by the stress event.

Some stress events are high probability/low impact events. The resources and policies needed to deal with these events should be incorporated in the institution’s base liquidity strategy.

Other stress events are low probability/high impact events. For most institutions, the cascading event example triggered by an asset quality problem may be an example of a low probability/high impact event. Low probability/high impact events should be addressed with contingency funding plans.

A low probability/low impact event would in all likelihood not need to be addressed in either the base liquidity strategy or in a contingency funding plan.

A high probability/high impact event should be planned for as part of the base liquidity strategy component of the business plan. A common example is the second cascading event example where loan growth significantly outpaces core funding growth.

The timing and extent of high probability/high impact events are far less predictable than most assumptions in a base liquidity strategy. Those events can be identified as part of the review of stress events to make appropriate use of stress testing and event triggers as part of base liquidity strategy development in Tool 5.
Liquidity Stress Event Horizons

Liquidity stress horizons can range from a few days or weeks to many months or potentially multiple years.

Temporary disruption A temporary disruption may occur intraday, day-to-day, or over a few days or weeks. Such events as natural disasters, disturbances in payment or settlement systems, and other operational disasters may cause temporary disruptions in an institution’s liquidity position. Your liquidity plan needs to make the resources available to deal with temporary disruptions.

Medium-term disruptions A medium-term disruption may occur over a number of weeks or months over time frames of up to one year. Medium-term disruptions can be caused by such events as negative press coverage, unplanned asset growth, customers unexpectedly exercising options to withdraw funding, and market dislocations. Your liquidity plan needs to provide the resources needed to deal with medium-term disruptions to your institution’s liquidity.

Long-term disruptions Long-term disruptions occur over periods longer than one year. Cascading events like failing risk-based capital requirements will normally result in long-term disruptions. In addition, the inability to grow Core Funding as fast as loans would have to be described as a long-term disruption, as loans have outgrown deposits for the banking industry in 13 of the last 18 years.
Types of Stress Events

Causes

Most of the events in the “cause” category are external events that have the potential to cause liquidity stress in an institution. A few are events brought on by taking inappropriate levels of risk within the institution.

Changes in Economic Conditions Generally periods of downturn are followed with periods of economic recovery. Both downturns and recoveries are potential causes of liquidity stress.

- Economic downturns may cause declines in asset quality, inflow of flight-to-safety funds, declines in the demand for quality loans, and an increase of customer utilization of existing credit lines.

- Economic recoveries might cause an outflow of flight to safety funds to the markets, significant increases in loan demand to fuel the recovery, and a variety of other effects.

Widening of credit default spreads A credit default spread is the spread between the yield of two financial instruments with essentially identical cash flows where one instrument is considered free of credit risk (e.g., 5-Year Treasury Bond) and the other carries credit risk (e.g., 5-Year AAA Corporate Bond). Credit default spreads widen when the actual or perceived credit risk in the bond carrying the risk increases. Widening credit default spreads can cause liquidity stress in an institution. For example:

- Bonds held in an institution’s portfolio decline in value for reasons other than changes in rates. This makes the bonds less liquid as demand for this kind of security weakens or because the institution is unable or unwilling to absorb the losses that will occur if bonds are sold. The value of these bonds when pledged as collateral also diminishes.

- Those institutions issuing corporate bonds as a funding vehicle find their funding costs will increase even though rates have not.
Those institutions which access capital markets or which obtain funds through organizations like Federal Home Loan Banks will find their funding costs increase and potential access to funds diminish if perceived reductions in credit quality of such organizations reduce or limit demand for their securities.

The value of portfolio loans may decline as the securities used as discount rates see their rates increase as a result of widening credit default spreads.

The market value of loans held for sale may decline for reasons other than changes in rates when the entity buying the loans has its funding costs increase as a result of widening credit default spreads.

Dislocations in the Financial Markets A financial market dislocation occurs when market pricing is not commensurate with true risk. Financial instrument pricing in the financial markets is a by-product of the rate needed to make the supply of the instrument match the demand for it. Dislocations can occur for a variety of reasons. A common reason is that the investors feel they lack the information needed to assess an appropriate credit default spread for a class of instruments. As a result, they desert the market for the instrument. The result of the drop in demand is that the market price of the instrument drops dramatically (same supply, less demand) or the market for the instrument may disappear entirely (same supply, no demand). For example:

- Bonds held in the institution’s portfolio decline in value for reasons other than changes in rates. In some cases, there may be no market for the bonds at all.
- The cost of Non-Core Funding like FHLB advances can increase when market dislocations cause the spreads to widen beyond what would be normally be considered as reasonable credit default spreads. Some potential funding sources like Trust Preferred Stock may disappear entirely.
- Institutions that had originated loans for sale in the secondary market might find that either the markets have disappeared or that the loans have to be highly discounted if they are to be sold. The inability or unwillingness to sell these loans in the loan portfolio creates the potential for liquidity stress.

In mid-2007, the spread between comparable conforming and jumbo 1-4 family mortgages was in the range of 25 bp. By mid-2009, the spread had increased to 150 bp. Certainly some of the 125 bp increase in spread was due to higher credit risk due to price drops in expensive homes as opposed to inexpensive homes (widening credit default spreads). But the majority of the increase occurred because the secondary market for jumbo mortgages had all but disappeared. Investors disappeared due to all non-conforming loans being tainted by the publicity caused by the sub-prime non-conforming mortgages.
• The value of the institution’s investments in stock of cooperatives becomes impaired or is potentially impaired when the cooperative’s investment portfolio contains large portfolios of investments in dislocated markets. Examples of partners so affected in the recent financial crisis include some Bankers Banks and some FHLBs. In addition to reduced value and liquidity of the stock investment, the ability of these organizations to effectively provide both asset-based and liability-based liquidity came into question.

Operational or Local Disasters Operational or local disasters are stress events brought on by local natural disasters or by the failure of a major component of financial institution operations. These can potentially cause liquidity stress within an institution. For example:

• The institution may be unable to process incoming deposits or other sources of funding, leading to liquidity stress with the institution until the issue is resolved.

• The institution may be unable to process outgoing deposits, loans or other uses of funds leading to negative publicity, dissatisfied customers, and the perception the institution is unable to meet its obligations.

Interest Rate Risk Interest rate risk is the potential fluctuation in income and market value of financial instruments in a bank’s portfolio brought on by changes in interest rates. High levels of interest rate risk can cause liquidity stress in an institution in a variety of ways. For example:

• Mismanaged interest rate risk can reduce income and capital accumulation, leading to a failure to meet regulatory capital minima and the loss of well-capitalized status under the PCA regulations.

• In rising rate environments, mismanaged interest rate risk can cause investments and loans to decline in value. The effect can be a reduction in their value as collateral for Non-Core Funding sources. It can also reduce the potential sources of funds in the institution’s asset-based liquidity portfolio. This can occur even though the interest rate risk on an institution’s balance sheet is moderate.
• Changes in interest rates can significantly alter cash flows from a variety of loans, investments, deposits, and borrowings due to imbedded options including prepayment speeds, calls, or rate resets on variable rate loans.

**Credit Risk** Credit risk is the risk associated with borrowers being unable or unwilling to meet their repayment obligations as defined in both loans and securities. Credit risk can cause liquidity stress in a variety of ways. For example:

• Actions taken to charge off bad loans or investments or set aside reserves for future losses can lead to reductions in income or even operating losses. The losses in turn could erode capital, causing the institution to fail to meet well-capitalized PCA status.

• Asset quality problems could cause amortization, prepayments, and maturity cash flows to fall well below plan.

• Should the institution repossess collateral backing the loan, it might be left with non-earning assets with very limited liquidity.

**Operational and Legal Risk** Basel II defines operational risk as the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events. Examples of events that fall into this category include: internal fraud, external fraud, poor employment practices and workplace safety, business practice failures, damage to physical assets, business disruption and systems failures, and failures in execution, delivery, and process management. Legal risk arises from the potential that unenforceable contracts, lawsuits, or adverse judgments can disrupt or otherwise negatively affect the operations or condition of a banking organization. In addition to the direct economic impact, publicity relating to these issues can cause a lack of confidence in an institution, affecting access to Core, Near-Core, and Non-Core Funding.
Both Causes and Effects

Events can be both causes and effects. Once the event occurs, it may create other events that create stress.

**Unplanned Asset Growth** Unplanned asset growth can be both a cause and an effect. It can be an effect because it can be caused by a variety of external causes. For example:

- Demand for loans accelerates as the national or local economy improves, increasing new loan demand and causing present customers to unexpectedly increase credit line utilization.
- A local disaster causes loan demand to spike in order to rebuild after the disaster.
- Loans originated for sale in the secondary market are instead placed in the portfolio because potential losses on sale increase or because the markets for those loans are dislocated.
- Consumers and businesses dramatically increase the funds in their deposit accounts as they flee other markets to gain the safety of FDIC insurance protection.

Unplanned asset growth can cause a number of stress events. For example:

- Asset growth of the institution can exceed its ability to accumulate capital. As a result, it might fall below well-capitalized status under the PCA regulations and receive downgrades in CAMELS.
- Loans could outgrow core funding, causing an institution to turn to sources of asset-based liquidity or Near-Core or Non-Core Funding. The increased use of Near-Core or Non-Core Funding could then cause the institution to move outside its policy limits and reduce available liquidity needed to deal with other stress events.
• Deposits could outgrow loans, causing funds to flow into the investment portfolio at a negative spread. This liquidity build up could cause declines in net interest margin and potentially operating losses.

Declining Financial Institution Equity Prices The decline in financial institution equity prices can be general or institution-specific. General financial institution equity price declines can cause a liquidity stress. Institution-specific equity price declines may be an effect of other stress events discussed in this section (performance problems, negative publicity, etc.) and may cause liquidity stress for the institution. Here is a list of potential stresses caused by declines in general or institution-specific equity prices.

• General – Returns on bank stocks are generally unattractive. The funds go elsewhere.

• General and institution-specific – Stockholders are unwilling to approve additional stock issues because the actions will be dilutive.

• General – Because of the publicity relating to the performance of bank stocks, investors may be unwilling to invest in a non-exchange-traded bank.

• Institution-specific – The fact that bank stock is underperforming relative to the industry causes actions aimed at raising additional stock to be extremely dilutive to stockholders.

• Institution-specific – Negative publicity results from publicly-available information surrounding the performance of the bank’s stock. Consequences of negative publicity are discussed on page 32.
Changes in Agency Credit Ratings  Three credit rating agencies can play a role in liquidity stress: bond rating agencies, consumer credit rating agencies, and bank rating agencies. All three can be causes of liquidity stress.

Bond Rating Agencies: Bond rating agencies rate securities being issued in the markets. Firms like Moody’s and S&P have defined ratings levels of bonds and presumably provide ratings on bonds consistent with the rating standards. A downgrade of a bond by a rating agency typically increases the credit default spread for that security, causing a decline in price. The opposite happens when the rating is upgraded.

Downgrades in bond credit ratings can cause liquidity stress in an institution in a variety of ways.

- A change in the ratings on bonds held in its investment portfolio can cause the value to rise or fall, potentially increasing or decreasing the bond’s value as both a source of liquidity and collateral.
- A change in the rating of bonds issued by a funds provider like an FHLB could raise or lower an institution’s cost of borrowed funds.
- A change in ratings on bonds issued by an organization purchasing loans from a bank (e.g., Freddie Mac or Fannie Mae) could raise or lower the discount rate being used in purchasing loans sold to that organization.

Consumer Credit Rating Agencies: Organizations such as Equifax and Experian use standardized methods to credit-score consumers. An frequent topic among bankers encountering asset quality problems is credit score migration – when an A credit borrower migrates to a B or a C. Changes in credit ratings by consumer rating agencies may create liquidity stress in a financial institution in a variety of ways.

- A decline in demand for quality loans as consumers migrate from A to B or C. This is especially true if the institution only makes A or B loans.
- Loans priced based on an A credit rating will be underpriced relative to their risk as the customer migrates to a B or C. As a result, the credit default spread priced into the loan fails to cover the losses experienced as the consumer migrates.
• Institutions making loans to A, B and C borrowers will find a smaller percentage of their loans to be saleable, as the markets for B and C loans are small or non-existent.

**Bank Rating Agencies:** A number of firms like Bankrate.com and Bauer Financial provide ratings on banks. These rating agencies are used by consumers, by the media, and by some non-bank depository organizations. Changes in bank ratings by bank rating agencies can be an effect of actual and perceived changes in the institution’s financial performance, but they can also cause liquidity stress in a variety of ways. For example:

- Changes in ratings can cause a reduction in the availability of Near-Core and Non-Core Funding as a result of non-insured consumers or Non-Core Funding providers reducing or eliminating access to their funding.
- Changes in ratings can cause adverse publicity.

**Deterioration in Asset Quality** Generally, we think of asset quality as it relates to loans. It can also apply to securities. Deterioration in asset quality can be the effect of downturns in economic conditions as well as imprudent underwriting of loans or asset-backed investments. Asset quality deterioration can cause a number of liquidity issues in a financial institution. For example:

- An increase in charge-offs and the need to set aside allowances for future loan losses often cause declines in profitability and may cause declines in capital ratios.
- Tightening credit underwriting standards can lead to a decline in loan originations.
- A reduced ability to securitize loans and sell into the secondary market may limit sources of funding.
- Cash flows from troubled loans and investments may fall below the levels specified in the note, diminishing sources of funds and causing the issuer to make up cash flow shortfalls for certain classes of investors.
**Negative Press Coverage or Other Events** Negative press coverage can be the effect of a variety of issues related to your institution or another. Certainly, performance problems, regulatory sanctions, and compliance violations can lead to negative press about your institution or another. But other publicly disclosed incidents or comments about the industry can shake customer confidence, including fraud, inappropriate behavior by employees and board members, harsh treatment of customers, and statements by disgruntled ex-employees. Aside from the press, negative news travels quickly, especially in small towns. Internet blogs, e-mail, websites, social media sites, etc. can disseminate information – or misinformation – quickly.

Negative publicity can cause liquidity stress in a variety of ways. For example:

- Customers with CD balances above FDIC insurance limits may pull funds from the institution. Even customers below the FDIC insurance limit may be nervous and withdraw funds.
- Customers may withdraw funds because of anger or concern over the incident.
- Quality loan customers may seek alternatives if concerned about the viability of the institution.
- Other customers may unexpectedly pull down unused credit lines to insure funds will be available if needed.
- Efforts to use pricing and marketing to raise new funds may be less successful.
- Providers of Near-Core and Non-Core funding may become more reluctant to provide funds.
- Investor confidence may be shaken, resulting in difficulty raising additional capital that may be needed.

**Operating Losses** Operating losses result when recurring sources of income (interest income and fees and services charges) are exceeded by recurring sources of expense (interest expense and operating expenses). They are almost always an effect of a significant performance problem in the institution. The problems can be related to risk (interest rate risk, credit risk, liquidity risk, and operating risk), pricing (loan and deposit pricing), fee income or expense management, or they may be a result of poor decisions as
to balance sheet structure. Occasionally operating losses will occur as a result of fraud (internal or external) or catastrophic events (floods, hurricanes, tornados, etc.). Operating losses have the potential to cause a financial institution’s liquidity to suffer in a variety of ways.

- Losses will reduce an institution’s capital, potentially causing it to fail minimum capital standards unless offset by capital injections or non-operating gains.

- Losses can lead to adverse publicity, because an institution’s performance data is public via call reports.

- Losses can lead to downgrades in CAMELS and PCA well-capitalized status. The ramifications of these downgrades are discussed in the next section.

- Losses could cause external bank rating or bond rating agencies to downgrade the institution’s ratings. Ramifications of rating agency downgrades are discussed earlier in this section.

**PCA and Camels Ratings Downgrades** Downgrades in CAMELS and PCA ratings are an effect of changes in the institution’s performance. They also give rise to an increasing frequency of regulatory visits and, potentially, enforcement actions ranging from informal letters to formal agreements like Consent Decrees and Cease and Desist orders. Aside from the regulatory actions, downgrades in CAMELS and PCA ratings may cause liquidity stress in the following ways:

- Banks may be unable to participate in brokered CD markets or may be limited in their participation.

- Banks may receive increased collateral haircuts from FHLBs.

- Banks may not be allowed to raise deposit rates more than 75 bp above national averages.

- Adverse publicity may result from the publication of formal enforcement actions. The effects of negative publicity were discussed on page 32.
Loss of Well-Capitalized Status  The loss of well-capitalized status under the PCA regulations can be the effect of a variety of issues in the institution, including the following:

- Credit risk issues, interest rate risk issues, loss of key sources of fee income, dramatic increases in operating expense, one-time losses in the value of securities and loans, losses on sales of assets, etc., could result in operating losses.

- Asset growth well in excess of capital growth from retained earnings and external sources could reduce the capital-to-assets ratio.

- The institution could experience a dramatic shift in risk weights of assets under risk-based capital regulations.

- The institution could experience an inability to replace maturing tier one or tier two capital.

Loss of well-capitalized status can cause a variety of financial institution liquidity stresses. For example:

- Compliance costs may increase dramatically, causing reductions in income or operating losses.

- Some sources of Near-Core and Non-Core Funding may no longer be available or collateral haircuts might be increased by those funding sources, reducing liability-based liquidity.

- The institution may be limited to paying deposit rates no higher than 75 bp above national average rates, reducing its ability to raise Core Funding to meet liquidity needs.

Demise of Business Lines

The demise of a business line can be the effect of some events and the cause of other events. This may be experienced on two levels. First a major balance sheet or income statement source may decline. Second an industry may weaken that makes major contributions both directly and indirectly to the balance sheet and the income statement.

Insured institutions should be prepared for the specific contingencies that will be applicable to them if they become less than Well Capitalized pursuant to Prompt Correction Action (PCA) provisions under the Federal Deposit Insurance Corporation Improvement Act.

Interagency Policy Statement on Funding and Liquidity Risk Management
Here are a few examples:

- Regulatory or legislative change might affect a major source of fee income like income from overdraft protection programs (ODP). While the direct effect on liquidity may not be significant, the event might cause the institution to take risk elsewhere in its balance sheet to offset the loss of income, leading to liquidity stress caused by the risk taking.

- Economic change may affect the viability of a major local component of the economy like oil and gas. The economic decline could cause customers under stress to dip into their cash reserves (reducing funding sources) and increase their usage of credit lines (increasing funding uses).

- An institution may have developed specialty expertise in an area like aviation lending, with aviation customers holding a major portion of its loan portfolio and providing a major source of funding. Changes in fuel prices, regulation, and other factors may dramatically affect the viability of bank customers, causing stress to profitability and to sources and uses of funds.

**Changes in Cash Flows Received on Loans and Investments** Generally, changes in cash flows on loans and investments are an effect of an external event. The exception would be an asset quality problem which could result from either an external event or issues with the institution’s credit underwriting process. Here are some examples of external and internal events that could result in a change in loan and investment cash flows.

- In rising rate environments, prepayments on loans and investments could slow as customers lose incentives to refinance and may not be in a financial position to refinance debt. The reductions in prepayments will reduce cash flows from these financial instruments. In falling rate environments, prepayments would accelerate, causing cash flows to come in more rapidly than anticipated.
• During periods of asset quality problems, cash flows from troubled loans may slow down as customers fail to make payments as scheduled. In addition, customers fail to qualify to refinance loans because of tightening underwriting standards, in turn reducing loan prepayments.

• A rising rate environment would reduce the likelihood of call options being exercised on callable bonds because the issuers of the bond would need to refinance at higher rates. In falling rate environments call options would be exercised more frequently, causing cash flows from the bond portfolio to come in more rapidly than anticipated.

Customers Exercising Options to Withdraw Deposits The decisions by customers to unexpectedly exercise options to withdraw deposits can be the effect of a variety of internal and external events. For example:

• Large customers may elect to withdraw funds for their use or to move funds to a different institution. The extent of the effect on funding sources is highly dependent on the concentration of deposits from large depositors on the institution’s balance sheet.

• Negative publicity about the financial health of the institution or the entire banking system causes depositors with deposits in excess of FDIC insurance maximums to seek the safety of the FDIC insurance shield at other institutions.

• Negative publicity about the financial health of the institution or the insurance fund causes a run among small depositors who don’t feel their funds are safe even with FDIC insurance.

• In a rising rate environment, inadequate early withdrawal penalties or lax enforcement of early withdrawal penalties causes a large outflow of deposits from those seeking higher returns at competing institutions.
Inability to Renew, Replace, or Grow Core or Near-Core Funding  Inability to renew or replace maturing funding liabilities can be the effect of a variety of internal or external events. For example:

- Flight-to-safety funds flowing into a financial institution during periods of economic turbulence may return to the markets when the economic turbulence declines, causing an outflow of Core Funding.

- Customers with deposit balances in excess of FDIC insurance limits may move the excess funds to another financial institution during periods of general unease about the viability of banks or unease about the viability of the institution.

- Customers concerned about the viability of a particular financial institution may withdraw funds even though their balances are fully protected by FDIC insurance.

- An institution falling below well-capitalized PCA thresholds or under regulatory sanction may be subject to limits on maximum rates paid on deposits, inhibiting its ability to use high rates as an inducement to grow deposits.

- Institutions highly dependent on deposits of a particular type may be unable to replace those funds as that deposit type declines in balances. For example, as wealth transfers from seniors to Generation X, Generation Y, and Baby Boomers, CDs are increasingly replaced with money market funds.

- Institutions with high-balance concentrations in the hands of a relatively small number of customers may find it impossible to replace those funds should there be a dramatic change in the customers’ needs for cash or should the customers elect to change banking relationships.
Loss of Access to Near-Core and Non-Core Funding Sources

Loss of access to Near-Core and Non-Core Funding sources are generally the effect of external and internal events affecting those funding sources. Here are some examples:

- Loss of well-capitalized status under PCA regulations could cause some funding sources to disappear entirely or be heavily restricted. Brokered CDs are an example.

- Declines in the institution’s financial performance could cause some sources to deny access to their funding or increase collateral haircuts. Access to FHLB advances is an example. Market dislocations might cause some funding sources to disappear. In the recent financial crisis, access to Trust Preferred Stock disappeared as the market lost its appetite for these investments.

Customers Exercise Options on Off-Balance Sheet Commitments

Customers unexpectedly exercising off-balance sheet commitments are an effect of a variety of different events, which increase utilization of funds. For example:

- Customers are under economic stress. Because their personal or business cash flows are negative, they increase utilization of credit lines. If increased line utilization is widespread, an unanticipated increase in outstanding loans can occur.

- Negative press coverage raises questions about a bank’s ability to meet its commitments to customers. This may cause customers to pull down available credit lines to ensure funds are available when needed, causing an unanticipated increase in outstanding loans.

- In a recovering or expanding economy, customers may increase use of credit lines as they take advantage of opportunities afforded by the economy, causing an unanticipated increase in outstanding loans.
Changes in Market Price or Price Volatility of Asset Types

Market price changes and volatility in pricing on loans and investments are generally an effect of either an internal or external event. Examples of events causing market price changes or volatility in price include:

- Changes in market rates cause the value of loans and investments with longer durations to rise or fall by significant amounts.
- A rising rate environment can increase the investment and loan price volatility of many assets with imbedded options. A rising rate environment affects prepayment speeds and the exercise of calls imbedded in these instruments, causing a decline in asset value.
- Widening of credit default spreads could cause declines in the value of affected loans and investments independent of changes in market rates.
- Market dislocations could cause significant declines in the value of affected instruments as the perceived risk in the instruments increases or as potential investors desert the market for these instruments.
- Market dislocations could cause changes in market acceptance of an asset, e.g., GSE buybacks.
- Regulatory changes in asset categorization, e.g., changing trust preferred securities (TPS) from Tier 1 to Tier 2.

Disturbances in Payment or Settlement Systems Disturbances in payment and settlement systems can be the effect of a variety of external or internal events including:

- National or local disasters can affect payment and settlement systems.
- Financial disasters can affect parties to transactions including correspondent banks, bankers’ banks and other parties involved in payment or settlement systems.
- Technical problems may take an automated payment or settlement system off line.

Generally these are short-term problems that might affect sources or uses of funds. The impact is highly dependent on the quantity of transactions affected and the role the institution plays in the payment or settlement process.

The Dodd-Frank Act prohibits a bank holding company (BHC) with at least $500 million in assets from treating newly-issued TPS as Tier 1 capital. BHCs under $15 billion may keep TPS in Tier 1 if the TPS were issued before May 19, 2010.
Cascading Events

Cascading events are a series of events that lead to progressively greater impacts on liquidity. They are generally made up of a combination of causes and effects. Two examples of a series of cascading events include:

### The development of an asset quality problem could:
- cause declines in profitability leading to operating losses, which
- cause failure to meet well capitalized PCA thresholds, which could
- result in an inability to raise brokered CDs and cause a decline in available FHLB lines due to increases in collateral haircuts, and
- cause a limitation to be placed on the institution’s ability to raise deposits at rates more than 75 basis points above national averages, which may
- cause a significant liquidity crisis at the institution.

### An economic recovery could:
- lead to Loan growth exceeding deposit growth,
- causing the institution to tap into asset-based liquidity, and
- increase its reliance on Non-Core and Near-Core Funding to fund loan demand,
- leading to a breach in the minimum asset-based liquidity policy limits and maximum Non-Core and Near-Core Funding policy limits,
- resulting in formal regulatory actions or downgrades in CAMELS ratings,
- leading to potential for negative publicity,
- leading to declines in equity prices, and
- loss of Non-Core and Near-Core Funding, and
- cause a significant liquidity crisis at the institution.
Choosing Scenarios

Tool 5 will cover the development of a liquidity plan. The plan will include a base liquidity strategy along with one or more stress event scenarios. Beginning in the next section, you will identify the stress events you will wish to incorporate in your institution’s liquidity plan. Then as you work through Tools 2-4 you will add notes on how those stress events will affect Core Funding, Near-Core and Non-Core Funding, and asset-based liquidity in two ways:

1. How will the stress event affect that area?

2. What kinds of strategies might you employ in that area to offset the effects of the liquidity stress event?

In the past, examiners may have considered a liquidity plan to be acceptable if it contained one or two scenarios. For example, one scenario could be cascading events leading to loss of well-capitalized PCA status. Another could be a temporary or medium-term disruption.

At this point, it is advisable to develop three or four scenarios. This will enable your liquidity strategy to better meet the test of time as the approach to regulatory liquidity compliance evolves. Scenarios should consider systemic and bank-specific events. In choosing the scenarios you wish to model, you should:

• Tailor the strategies to your institution. Scenarios should hit your institution where it is most vulnerable.

• Be aware of – but not overly reliant on – history. Try to avoid saying to yourself, “That could never happen, because it has never happened before.” There are plenty of examples from the recent financial crisis that contradict this view.

• Choose at least one cascading event scenario where the situation continues to get worse over time.
The following are four general stress scenarios you might consider incorporating in your liquidity plan, ranked in importance.

1. A low probability/high impact, long-term disruption that is a series of cascading events. Falling below well-capitalized PCA status generally will be one of the cascading events in this scenario. Some of the more common events causing an institution to fall below well-capitalized status are inappropriate levels of interest rate risk, credit risk, legal or operations risk, widening credit default spreads, market dislocations, and unexpected asset growth.

2. Either an intraday, day-to-day, or multi-week operational disruption. These events may be caused by payment system disruptions or local disasters.

3. A high probability/high impact event like loan growth significantly outpacing Core Funding growth. This is a multi-year scenario.


The following pages review a case study for XYZ which follows the evolution of all four scenarios.
XYZ Scenarios

Figure 1-13 shows a completed ‘Changes in Economic Conditions’ section of the Cause Identification Worksheet for XYZ. A blank version of the worksheet, with space to identify multiple causes, is available at www.aba.com/LiquidityToolbox All of the sections have an identical format. XYZ has identified ‘Changes in Economic Conditions’ as a high probability/high impact event that has a long-term effect. Management has also indicated it plans to include this event in a scenario. In fact, this particular event will be included in two separate scenarios. In the first scenario, it leads to a cascading series of events where the financial condition of XYZ continues to worsen, primarily because it leads to an asset quality problem. In the second scenario, it leads to loans significantly outgrowing deposits, placing liquidity stress on XYZ.

**Figure 1-13** Changes in Economic Conditions Cause

<table>
<thead>
<tr>
<th>Cause: Changes in Economic Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability:</td>
</tr>
<tr>
<td>Impact:</td>
</tr>
<tr>
<td>Horizon:</td>
</tr>
</tbody>
</table>

Why this event may have or may not have an impact on your institution:
Economic declines can lead to asset quality problems, widening of credit default spreads, market dislocations, and a variety of other events with a significant potential effect on liquidity. Improving economic conditions can lead to loan growth exceeding deposit growth. These events can have a significant impact on XYZ because of the relative size of the loan portfolio.
XYZ Specific Scenarios

In XYZ’s case, its Cause Identification Worksheet was reviewed. Management elected to develop four scenarios:

1. **Capital Scenario** This is a cascading event scenario that begins with a combination of an economic downturn and poor credit underwriting that cause operating losses. Operating losses lead to a cascading series of events that include loss of well-capitalized PCA status, downgrades in CAMELS ratings, loss of access to brokered CD markets, adverse publicity, increased use of customer credit lines, increased collateral haircuts from FHLBs, limits on core deposit rates, and a number of other adverse effects. This is a low probability/high impact event, which means it needs to be addressed as part of a contingency funding plan. The liquidity situation gets progressively worse over time. A copy of the XYZ Capital Scenario Worksheet can be found at www.aba.com/LiquidityToolbox. It is also shown in figures 1-13 through 1-19.

2. **XYZ Recovery Scenario** This is potentially a cascading event scenario that begins with an economic recovery that increases loan demand, causing an unanticipated growth in loans. Concurrently, Core Funding growth falls well short of loan growth. This scenario could lead to falling below well-capitalized PCA status and falling outside of liquidity policy limits. If not managed properly, the Recovery Scenario could result in a set of cascading series similar to the Capital Scenario. Because the cascading events can be prevented by an effective management strategy response, the primary focus of this strategy will be on steps to prevent it from cascading. Because this is a high probability/high impact event, it will be dealt with as a stress to the base liquidity strategy. A copy of the XYZ Recovery Scenario Worksheet can be found at www.aba.com/LiquidityToolbox.

3. **XYZ Market Dislocation Scenario** This is a scenario brought on by a market dislocation or widening credit default spreads in the securities markets, causing XYZ to be forced to hold mortgages originated for sale in the markets. This causes an unexpected growth in assets. Because an appropriate management strategy could prevent its effects from being felt long-term, it is not constructed as a cascading event scenario, and the primary focus will be on management actions needed to prevent it from cascading. Because it is a low probability/high impact event, it will need to be dealt with in a contingency funding plan. A copy of the XYZ Market Dislocation Scenario worksheet can be found at www.aba.com/LiquidityToolbox.

4. **XYZ Payment System Scenario** This is a day-to-day scenario where a local disaster or system outage causes a disruption in incoming deposit account and loan payment transactions causing a short-term liquidity problem for XYZ. This is a low probability/high impact event that needs to be addressed in the contingency funding plan. A copy of the XYZ Payment System Scenario worksheet can be found at www.aba.com/LiquidityToolbox.

As work proceeds through Tools 2-4, additional documents will be attached to each of these four scenarios.
Figure 1-14  Capital Scenario – Definition

Institution: XYZ
Scenario Name: Catastrophic Capital Compliance Event
Date Completed: 11/18/09  Completed By: Tom Farin
Describe the Scenario: This cascading event scenario focuses on an economic downturn leading to asset quality problems resulting in XYZ falling below risk-based capital minimums. The liquidity crisis worsens throughout the scenario.

Figure 1-15  Capital Scenario – Cause/Effect Sequence

| Asset-Quality Problem | Net Operating Losses, Adverse Press, PCA and CAMELS Downgrades | 3 Months |
| Loss of Well-Capitalized Status | Increased FHLB Haircuts, Loss of Access to Brokered CDs, Adverse Press, PCA and CAMELS Downgrades, Rating Agency Downgrades, Limits on Deposit Offering Rates | 3 Months |
| Adverse Press | Loss of Large Depositors, Loss of Core Funding, Increased Line Utilization, Inability to Raise New Deposit Funding | 3 Months |

Figure 1-16  Capital Scenario – Horizon, Probability & Impact

| Horizon: | Intraday | Day-To-Day | Weeks | Medium Term | Long Term |
| Probability: | None | Low | High |
| Impact: | Low | High |
**Figure 1-17** Capital Scenario – Core, Near Core and Non-Core, Asset-Based Liquidity Effects

<table>
<thead>
<tr>
<th>Describe Potential Effect On:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Funding:</td>
</tr>
<tr>
<td>• Some erosion of Core Funding as press makes public aware of financial condition</td>
</tr>
<tr>
<td>• Limits on deposit rates</td>
</tr>
<tr>
<td>• Reduced success in raising new funding and renewing existing funding</td>
</tr>
<tr>
<td>Near Core and Non-Core Funding:</td>
</tr>
<tr>
<td>• Loss of access to brokered CD markets and possibly CDARS</td>
</tr>
<tr>
<td>• Loss of or increased cost of FHLB advances and other potential forms of collateralized funding</td>
</tr>
<tr>
<td>Asset-Based Liquidity:</td>
</tr>
<tr>
<td>• Market dislocations reduce value of securities and loans pledged as collateral</td>
</tr>
<tr>
<td>• Prepayments on mortgages and securities slow as customers feel effects of financial stress</td>
</tr>
<tr>
<td>• Customers increase line utilization to balance cash flow and as a result of concerns over “whether the money will be available when we need it.”</td>
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</table>

**Figure 1-18** Capital Scenario – Potential Offsetting Actions

<table>
<thead>
<tr>
<th>Describe Potential Offsetting Actions In Areas of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Funding:</td>
</tr>
<tr>
<td>• Pricing and segmentation strategies used to raise additional Core Funding</td>
</tr>
<tr>
<td>Near Core and Non-Core Funding:</td>
</tr>
<tr>
<td>• Reciprocal deposits used to deliver insurance protection for large CD customers</td>
</tr>
<tr>
<td>Asset-Based Liquidity:</td>
</tr>
<tr>
<td>• Sale of loans and securities that would normally be held</td>
</tr>
<tr>
<td>• Lending curtailed</td>
</tr>
<tr>
<td>• Shrink-wrapping of customer credit lines around current outstandings</td>
</tr>
</tbody>
</table>

**Figure 1-19** Capital Scenario – Event Triggers

<table>
<thead>
<tr>
<th>Event Triggers: List any indicators that could be monitored that would provide a leading indicator that this scenario is beginning to unfold.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Negative growth in GDP</td>
</tr>
<tr>
<td>• Increasing credit default spreads</td>
</tr>
<tr>
<td>• Increase in delinquencies</td>
</tr>
<tr>
<td>• Declines in property values</td>
</tr>
<tr>
<td>• Reduction of target fed funds rate</td>
</tr>
</tbody>
</table>
ABA Toolbox on Liquidity

**Scenario Worksheet**

Institution: 

Scenario Name: 

Date Completed:    Completed By: 

Describe the Scenario: 

**Cause and Effect Sequence**

<table>
<thead>
<tr>
<th>Cause</th>
<th>Effect</th>
<th>Horizon</th>
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</table>

Horizon: [ ] Intraday [ ] Day-To-Day [ ] Weeks [ ] Medium Term [ ] Long Term

Probability: [ ] None [ ] Low [ ] High

Impact: [ ] Low [ ] High

Describe Potential Effect On:

- Core Funding: 
- Near Core and Non-Core Funding: 
- Asset-Based Liquidity: 

Describe Potential Offsetting Actions In Areas of:

- Core Funding: 
- Near Core and Non-Core Funding: 
- Asset-Based Liquidity: 

Event Triggers: List any indicators that could be monitored that would provide a leading indicator that this scenario is beginning to unfold.

- 

Attach Core Funding, Near-Core and Non-Core Funding, and Asset-Based Liquidity worksheets to this document.

The **Scenario Worksheet** is available for download at www.aba.com/LiquidityToolbox.
ABA Toolbox on Liquidity

**Cause Identification Worksheet**

Institution: __________________________

Date Completed: ____________________  Completed By: ___________________________

**Cause: Changes in Economic Conditions**

Probability: □ None  □ Low  □ High
Impact: □ Low  □ High  Include in Scenario □ Yes  □ No
Horizon: □ Intraday  □ Day-To-Day  □ Weeks  □ Medium Term  □ Long Term

Why this event may have or may not have an impact on your institution:

**Cause: Widening Credit Default Spreads**

Probability: □ None  □ Low  □ High
Impact: □ Low  □ High  Include in Scenario □ Yes  □ No
Horizon: □ Intraday  □ Day-To-Day  □ Weeks  □ Medium Term  □ Long Term

Why this event may have or may not have an impact on your institution:

**Cause: Dislocations in Financial Markets**

Probability: □ None  □ Low  □ High
Impact: □ Low  □ High  Include in Scenario □ Yes  □ No
Horizon: □ Intraday  □ Day-To-Day  □ Weeks  □ Medium Term  □ Long Term

Why this event may have or may not have an impact on your institution:

The four page **Cause Identification Worksheet** lists 18 causes. Download it at www aba com/LiquidityToolbox.