Semi-Annual Treasury Analysis and Liquidity Status Report

Prepared for: Finance and Administration Committee - Period ending June 30, 2016

CalPERS

Public Employees' Retirement Fund (PERF)

The PERF provides retirement benefits to the State of California, schools and other California public agency employees. The PERF benefits are funded by member contributions, employer contributions and by investment earnings. The analysis included in this report is for the time period of January 30, 2016 through June 30, 2016. Changes in investment asset allocation and investment strategies can significantly impact data reported from period to period.

Liquidity Coverage Ratio Analysis

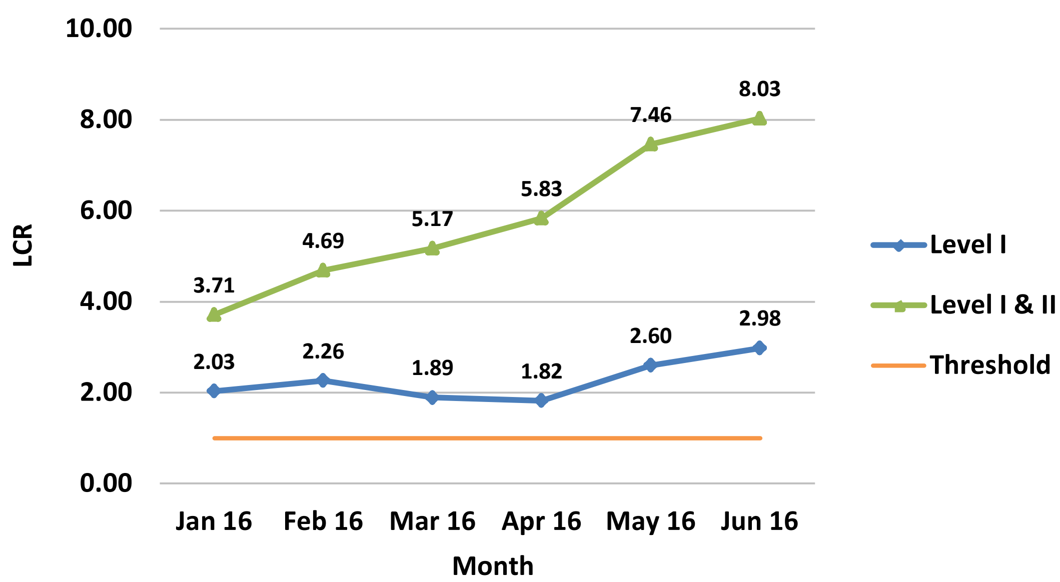
$$\text{Liquidity Coverage Ratios (LCR)} = \frac{\text{cash + assets convertible to cash + incoming cash sources}}{\text{outgoing cash uses + contingent cash uses}}$$

Funding Sources and Graph Details

Level I: Cash and cash equivalents
Level II: Borrowed liquidity held in cash
Level III: Sale of public assets
Threshold: Indicates the Fund's ability to cover 100% of monthly obligations.

Normal Environment - 30-Day Liquidity Coverage Ratios

The 30-day LCR included investment and non-investment available cash flows.

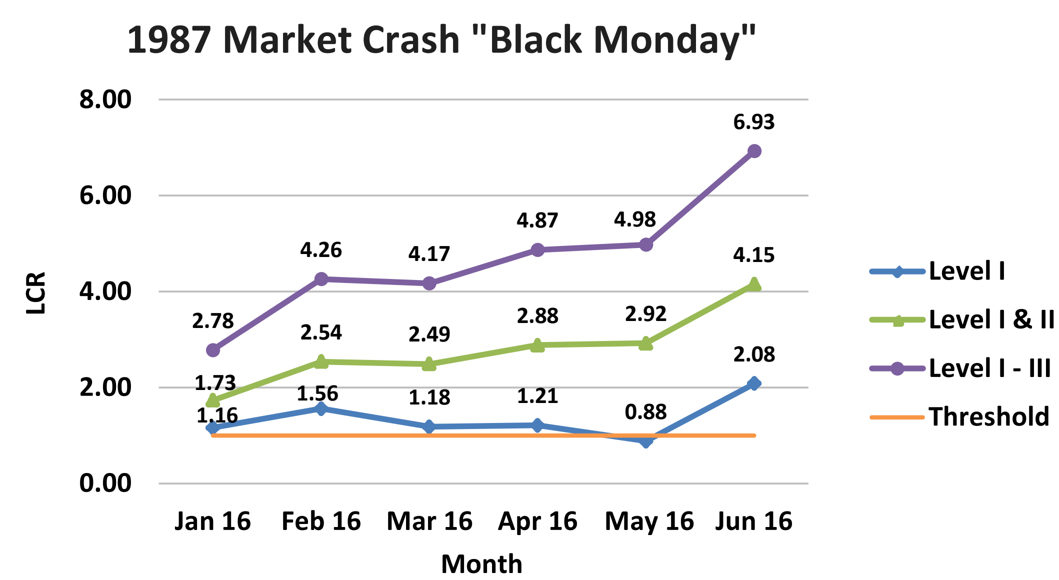


Level I: Level I LCRs remained above the threshold and were within the approved strategic asset allocation target for the Liquidity Program. Effective June 2016, the Investment Committee approved the continuation of the interim strategic asset allocation target at 1% (+/- 3%). The coverage ratio increase in May was due to $2.9 billion raised and held through June to execute a real estate investment purchase.

Level I & II: Since Level I LCRs remained above the threshold, it was not necessary to utilize Level II assets. Level II assets increased from March through June due to an increase in securities lending activity.

Stressed Environments - 30-Day Liquidity Coverage Ratios

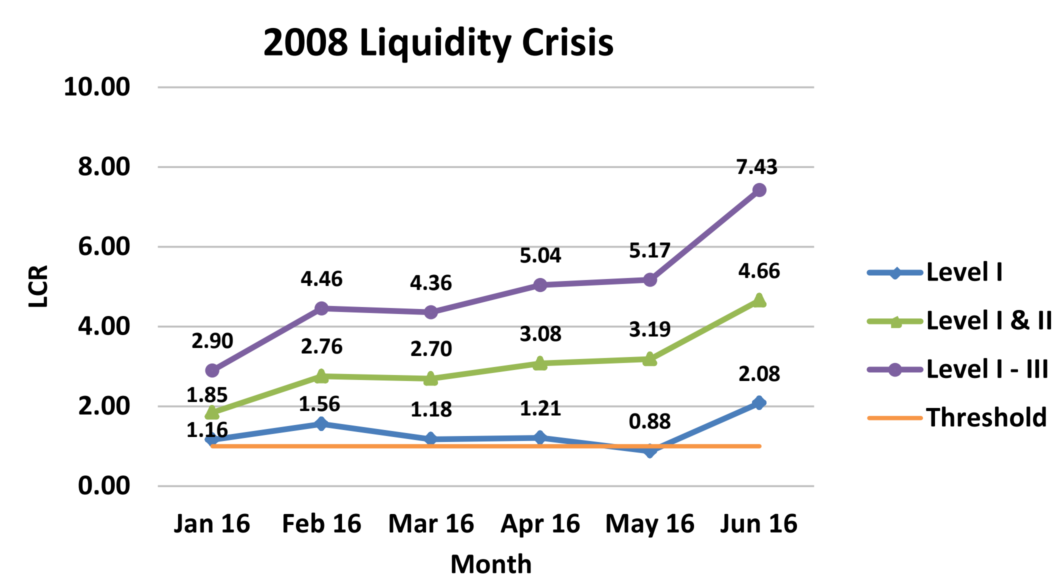
Stressed environment LCR scenarios were calculated assuming starting assets were stressed by the percentages actually experienced over 5 days in the 1987 market crash and 30 days during September 2008. Starting assets were further reduced by a transactional liquidity % equal to the estimated % of the assets that could have been liquidated during the 30-day period. Under the stressed scenarios, asset class sources were reduced to zero and uses were doubled.



Level I: With the exception of May, Level I liquidity coverage ratios were adequate had a stressed event similar to "Black Monday" occurred. The May LCR fell below the threshold due to greater than normal investment outflows in infrastructure and private equity investments.

Level I & II: Had a stressed event similar to "Black Monday" occurred in May, CalPERS may have needed to utilize Level II assets to meet monthly obligations because Level I fell below the threshold.

Level I – III: CalPERS would not have needed to utilize Level III assets.



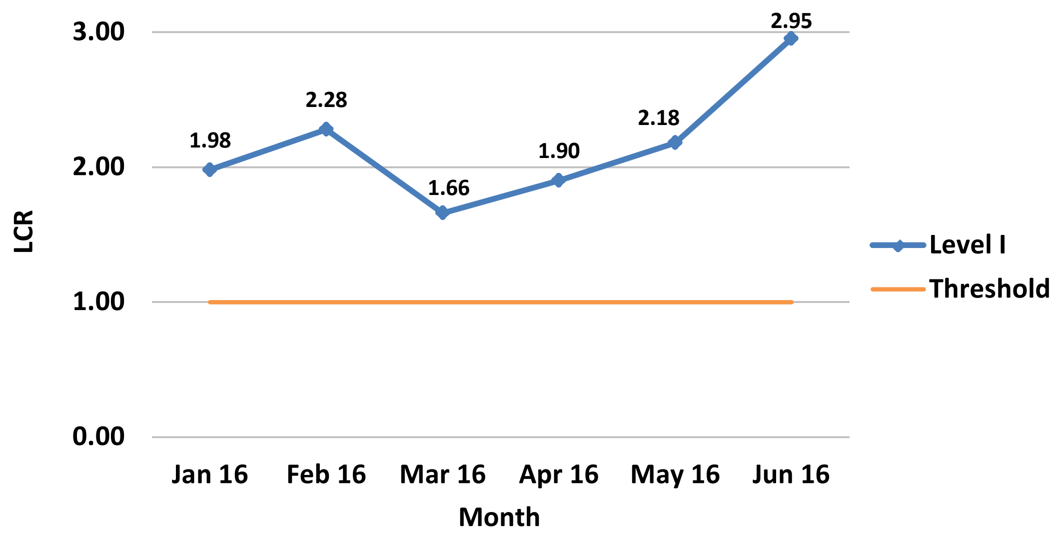
Level I: With the exception of May, Level I LCRs were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. The May LCR fell below the threshold due to greater than normal investment outflows in infrastructure and private equity.

Level I & II: Had a stressed event similar to the 2008 Liquidity Crisis occurred in May, CalPERS may have needed to utilize Level II assets to meet monthly obligations because Level I fell below the threshold.

Level I – III: CalPERS would not have needed to utilize Level III assets.

Crisis Environment - 10-Day Liquidity Coverage Ratio

The 10-day LCR utilized only the available cash balance ten days prior to the payment date. The calculation assumed a five business day market lockdown as experienced on September 11th, 2001.



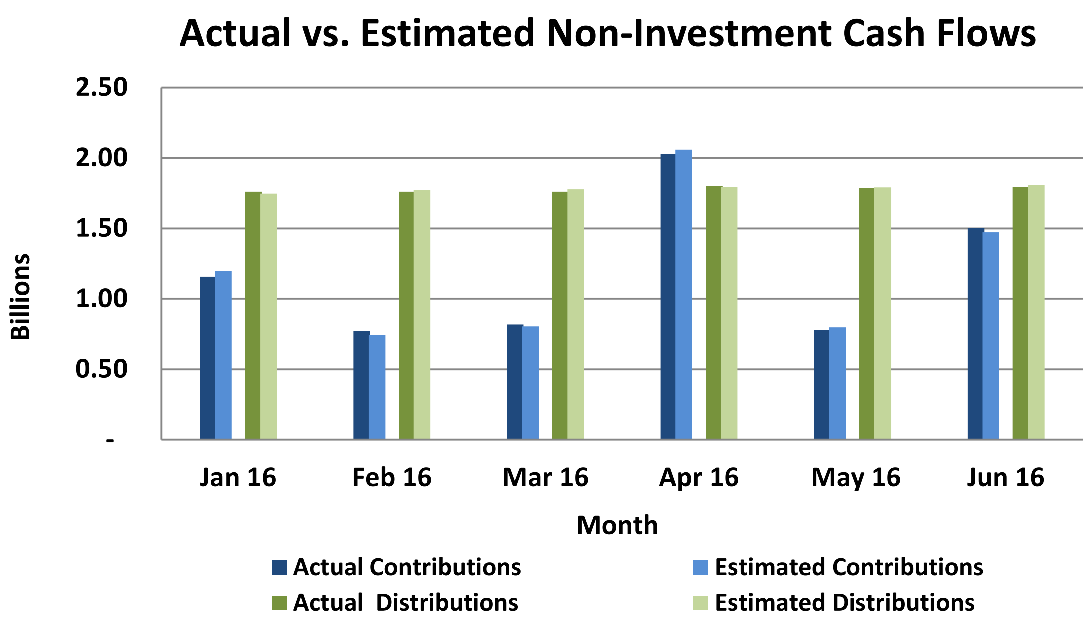
Level I: The PERF had sufficient cash to cover obligations ten days prior to the funding of member benefits. This indicated Level I was adequate had a crisis event occurred. In a crisis environment, CalPERS would not have access to Level II and Level III assets because it is assumed there was a five business day market lockdown similar to September 11th, 2001.

Overall PERF Liquidity Health

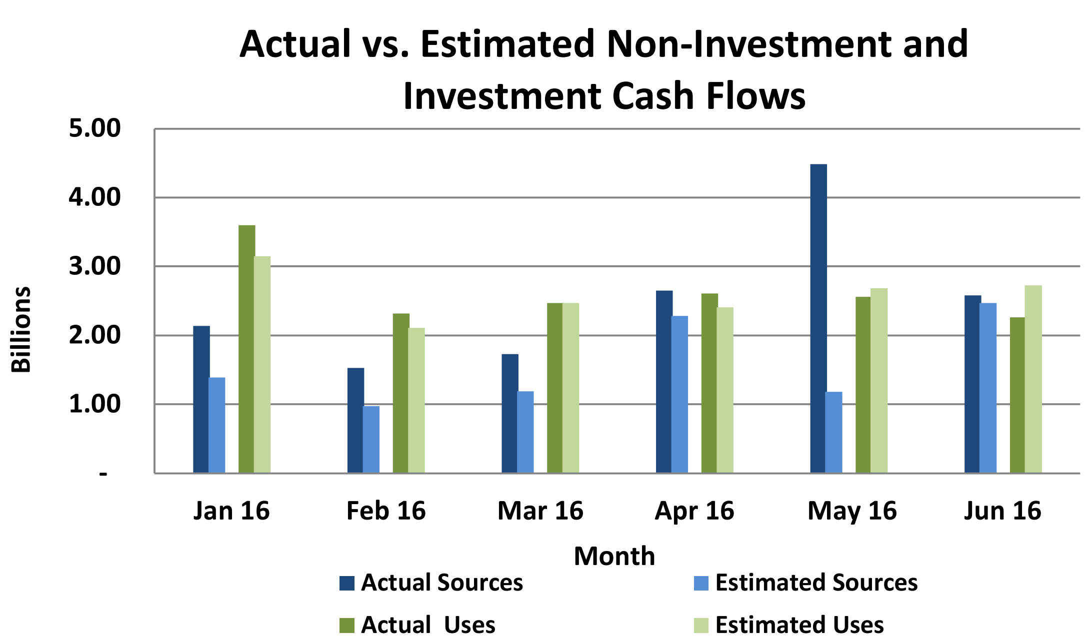
Based on Q3 and Q4 Coverage Ratio Analysis:

- ✓ CalPERS was able to make payments for benefits, operating expenses and projected investments regardless of market conditions.
- ✓ PERF's liquidity remained above the threshold in the normal environment.
- ✓ PERF's liquidity was adequate in stressed and crisis environments.
- ✓ Staff will continue to monitor PERF's liquidity health using LCRs.

PERF Cash Flow Forecasting



Cash flow forecasting accuracy was in the 90th percentile for Q3 and Q4. January and April's inflows were higher due to quarterly State employer contributions. June's inflows were higher due to quarterly State employer contributions and increased school contributions.



Cash flow forecasting for total fund cash activities (both non-investment and investment) can be volatile. Components that drove forecast volatility included, but were not limited to: private equity activity, real estate and investment expenses. In January, the sources variance was due to market adjustments and the timing of cash inflows to the cash collateral account. In May, a $2.9 billion inflow was generated from an equity sale that was not included in the estimated sources.

Semi-Annual Treasury Analysis and Liquidity Status Report

Prepared for: Finance and Administration Committee - Period ending June 30, 2016

Legislators' Retirement Fund (LRF)

The LRF provides retirement benefits to California Legislators elected to office before November 7, 1990, and to constitutional, legislative, and statutory officers elected or appointed prior to January 1, 2013. The Fund is closed to new participants. The number of LRF members has been declining in the last decade as eligible incumbent Legislators leave office and are replaced by those ineligible to participate in the LRF. Actuarially determined contributions will continue to be made by the State of California to supplement the existing assets until all benefit obligations have been fulfilled.

Liquidity Coverage Ratio Analysis

$$\text{Liquidity Coverage Ratios (LCR)} = \frac{\text{cash + assets convertible to cash + incoming cash sources}}{\text{outgoing cash uses + contingent cash uses}}$$

Funding Sources and Graph Details

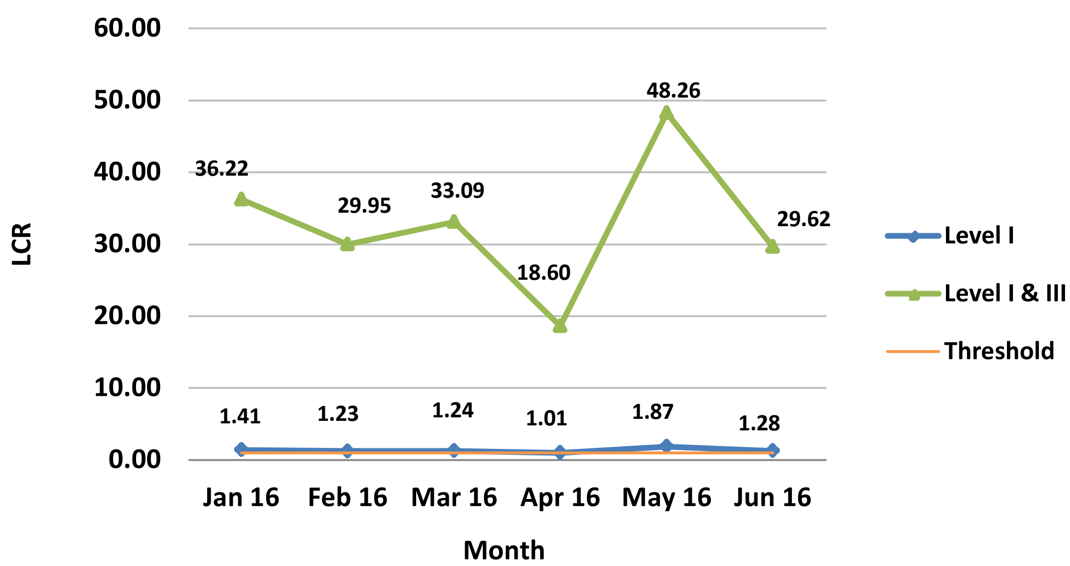
Level I: Cash and Cash Equivalents

Level III: Sale of Public Assets

Threshold: Indicates the Fund's ability to cover 100% of monthly obligations

Normal Environment - 30-Day Liquidity Coverage Ratios

The 30-day LCR included investment and non-investment available cash flows.

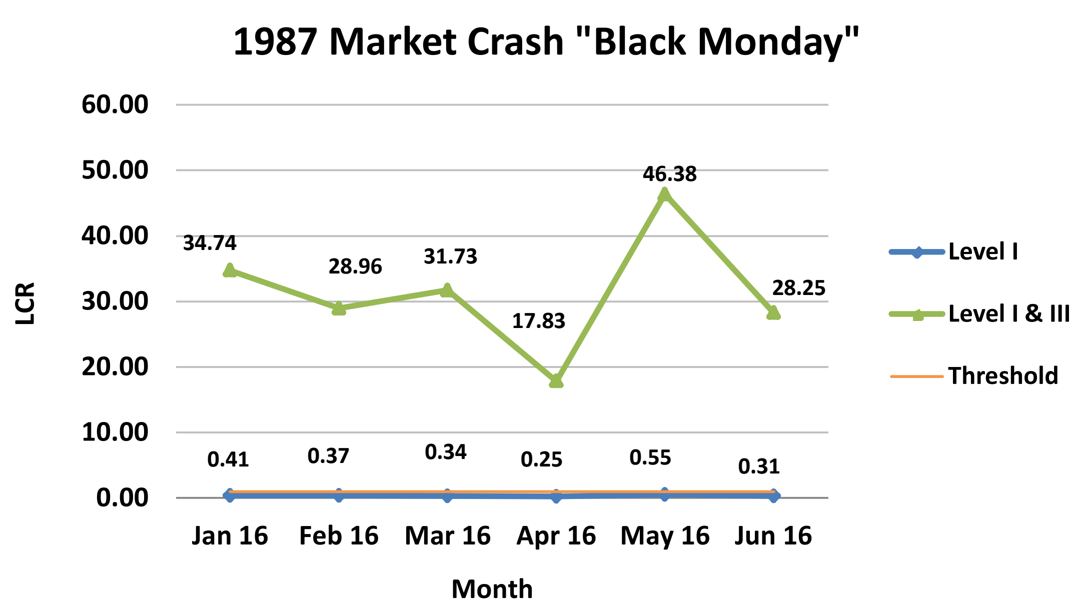


Level I: Level I LCRs remained above the threshold. The Fund does not maintain any private market investments or unfunded commitments which results in an LCR at or just above 1.0.

Level I & III: Since Level I LCRs remained above the threshold, it was not necessary to utilize Level III assets. The April decrease and subsequent May increase to Level III assets were due to the timing of benefit payments. Since May's settlement date fell on a Sunday, the Electronic Funds Transfer (EFT) benefit payments were disbursed in April.

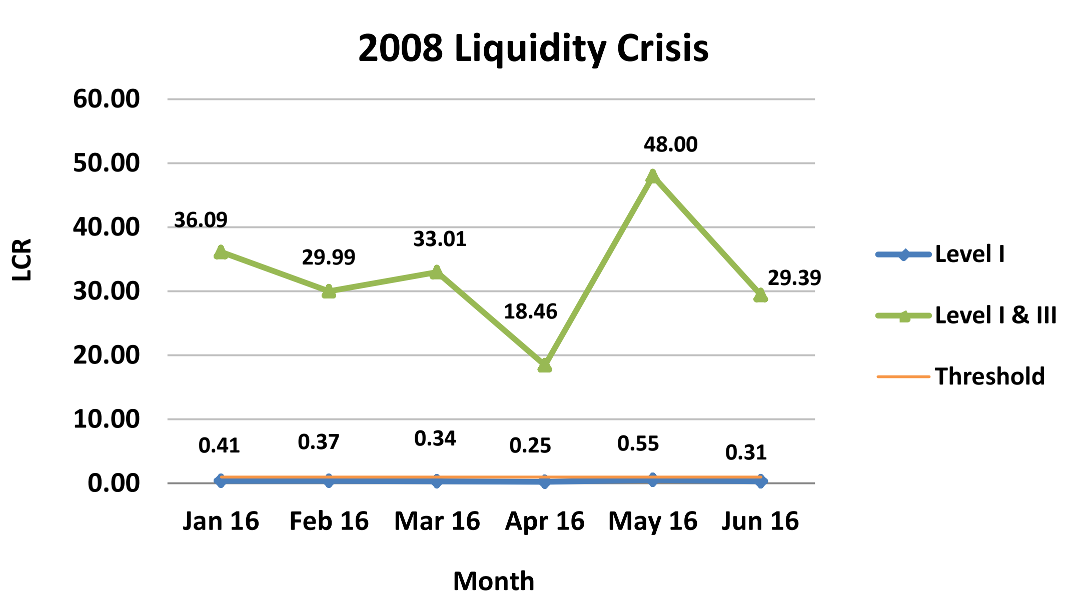
Stressed Environments - 30-Day Liquidity Coverage Ratios

Stressed environment LCR scenarios were calculated assuming starting assets were stressed by the percentages actually experienced over 5 days in the 1987 market crash and 30 days during September 2008. Starting assets were further reduced by a transactional liquidity % equal to the estimated % of the assets that could have been liquidated during the 30-day period. Under the stressed scenarios, asset class sources were reduced to zero.



Level I: Level I assets would have been inadequate had a stressed event similar to "Black Monday" occurred. The LCRs consistently fell below the threshold since this scenario assumed no investment inflows. This is a closed fund and relies on the planned sale of assets to pay member benefits.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to "Black Monday" occurred. The April decrease and subsequent May increase to Level III assets were due to the timing of benefit payments. Since May's settlement date fell on a Sunday, the EFT benefit payments were disbursed in April.

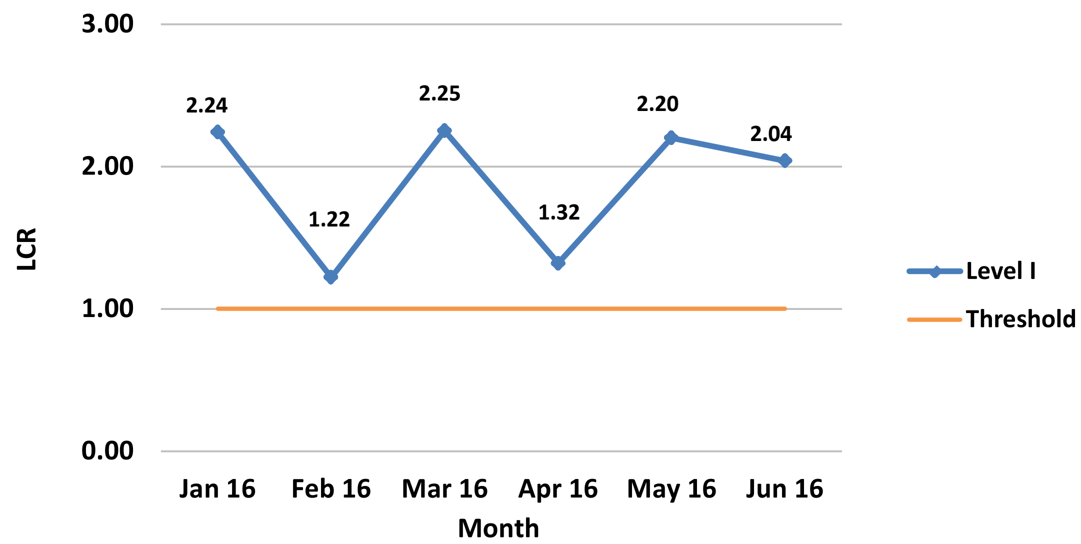


Level I: Level I assets would have been inadequate had a stressed event similar to the 2008 Liquidity Crisis occurred. The LCRs consistently fell below the threshold since this scenario assumed no investment inflows. This is a closed fund and relies on the planned sale of assets to pay member benefits.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. The April decrease and subsequent May increase to Level III assets were due to the timing of benefit payments. Since May's settlement date fell on a Sunday, the EFT benefit payments were disbursed in April.

Crisis Environment - 10-Day Liquidity Coverage Ratios

The 10-day LCRs utilized only the available cash balance ten days prior to the payment date. The calculation assumed a five business day market lockdown as experienced on September 11th, 2001.



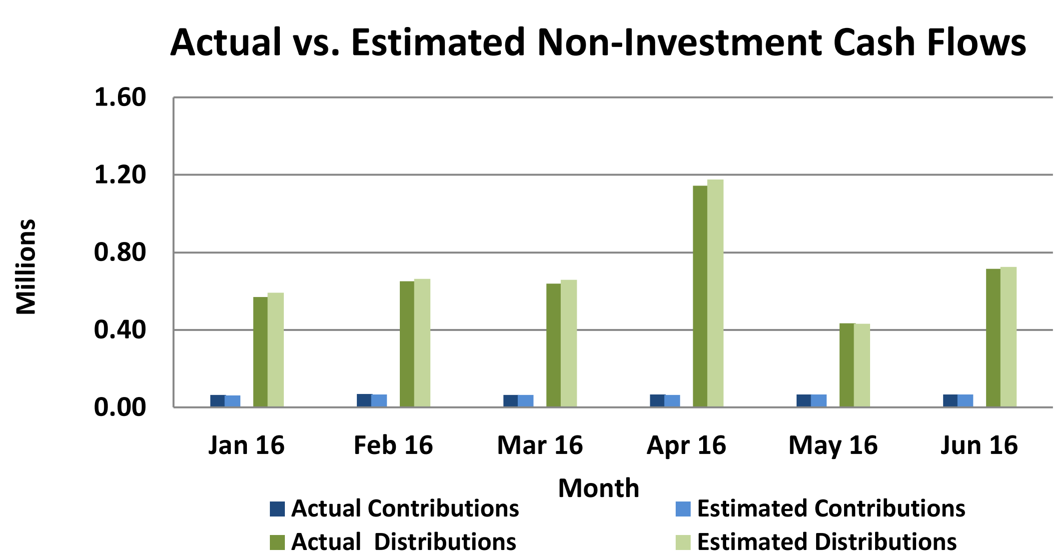
Level I: The LRF had sufficient cash to cover obligations ten days prior to the payment date. This indicated Level I would have been adequate had a crisis event occurred. Fluctuations in coverage ratios were due to timing of cash flows. In a crisis environment, CalPERS would not have access to Level III assets since it is assumed there was a five business day market lockdown similar to September 11th, 2001.

Overall LRF Liquidity Health

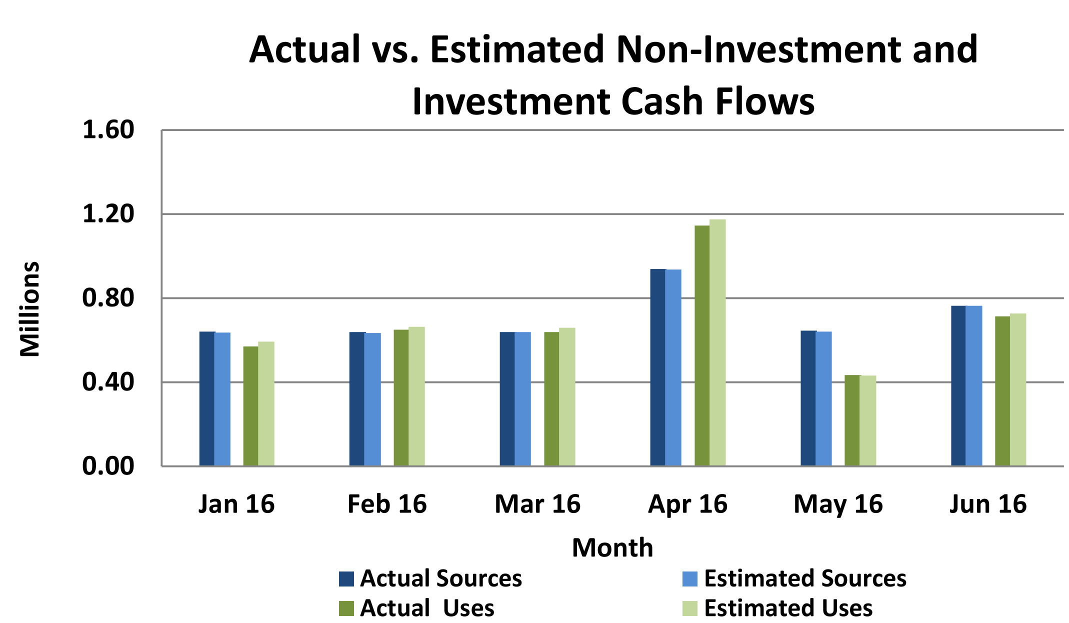
Based on Q3 and Q4 Coverage Ratio Analysis:

- ✓ LRF was able to make payments for benefits and operating expenses regardless of market conditions.
- ✓ LRF's liquidity remained above the threshold in the normal and crisis environment.
- ✓ LRF would have needed to sell public assets to meet monthly obligations in both stressed environments.
- ✓ Staff will continue to monitor LRF's liquidity heath using LCRs.

LRF Cash Flow Forecasting



Cash flow forecasting accuracy was in the 90th percentile for Q3 and Q4. The April increase and subsequent May decrease in distributions were due to the timing of benefit payments. Since May's settlement date fell on a Sunday, the EFT payment was disbursed in April.



Cash flow forecasting for total fund cash activities (both non-investment and investment) are typically consistent month to month. The April increase and subsequent May decrease in distributions were due to the timing of benefit payments. Since May's settlement date fell on a Sunday, the EFT payment was disbursed in April.

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Judges' Retirement Fund I (JRF I)

The JRF I provides retirement benefits to California Supreme and Appellate Court Justices and Superior Court Judges appointed or elected before November 9, 1994. The State of California does not pre-fund the benefits for this fund. The benefits are funded on a pay-as-you-go basis. The Fund maintains a reserve equal to two months of member benefit payments and obligations.

Liquidity Coverage Ratio Analysis

$$\text{Liquidity Coverage Ratios (LCR)} = \frac{\text{cash + assets convertible to cash + incoming cash sources}}{\text{outgoing cash uses + contingent cash uses}}$$

Funding Sources and Graph Details

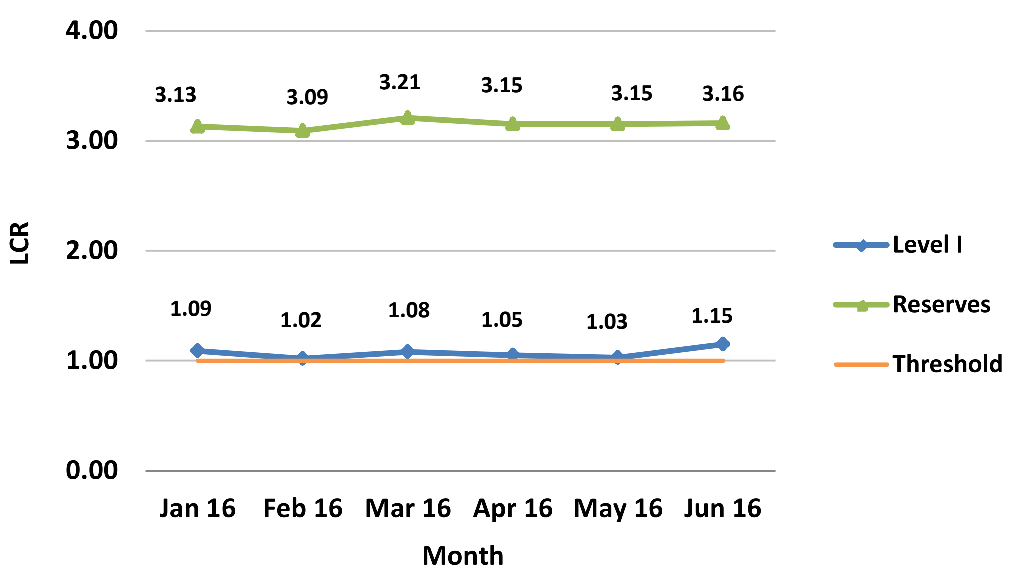
Level I: Cash and cash equivalents

Reserves: Cash and cash equivalents

Threshold: Indicates the Fund's ability to cover 100% of monthly obligations

Normal Environment - 30-Day Liquidity Coverage Ratios

The 30-day LCR included investment and non-investment available cash flows.

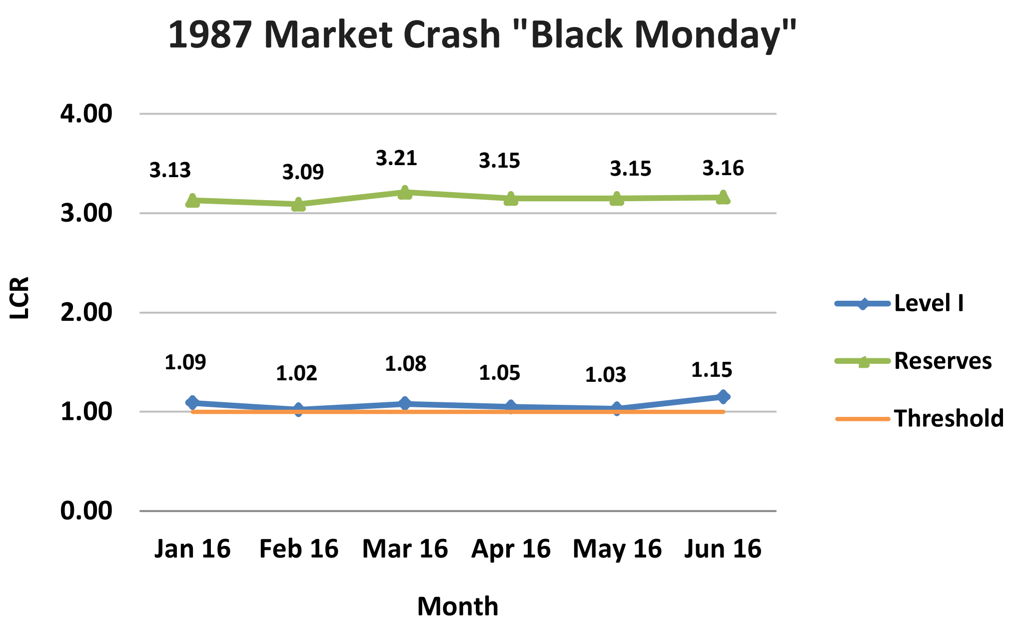


Level I: Level I LCRs remained above the threshold. The Fund maintained adequate inflows to cover monthly liabilities.

Reserves: Since Level I LCRs remained above the threshold, it was not necessary to utilize Reserves.

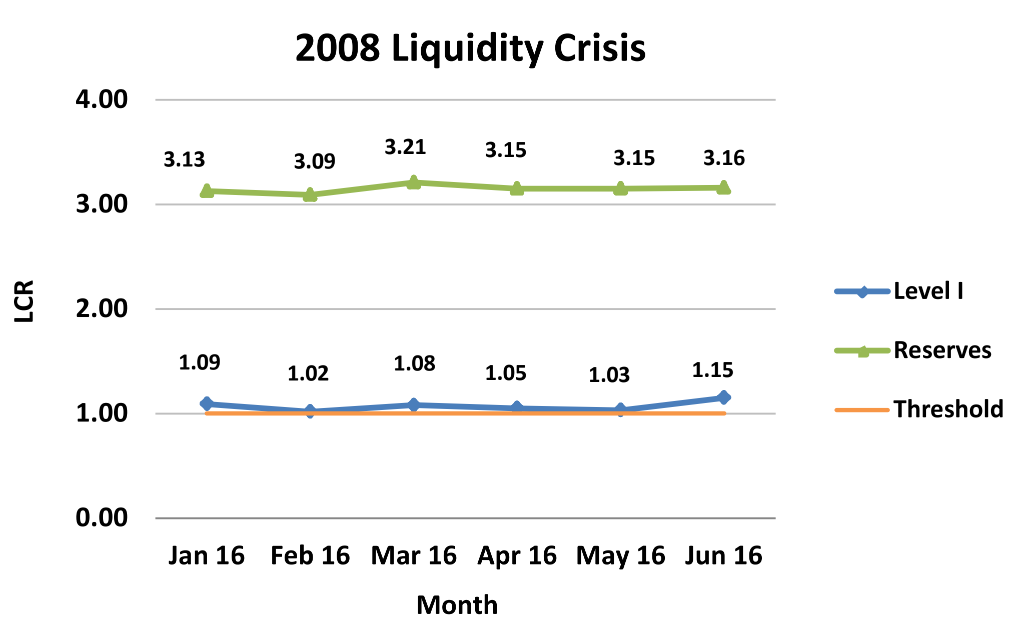
Stressed Environments - 30-Day Liquidity Coverage Ratios

Stressed environment LCR scenarios were calculated assuming starting assets were stressed by the percentages actually experienced over 5 days in the 1987 market crash and 30 days during September 2008. Starting assets were further reduced by a transactional liquidity % equal to the estimated % of the assets that could have been liquidated during the 30-day period. Since 100% of Reserves for JRS I were held in cash and cash equivalents, stress factors did not apply and the LCRs remained the same as the normal environment.



Level I: Level I LCRs were adequate had a stressed event similar to "Black Monday" occurred.

Reserves: Level I assets and Reserves were adequate had a stressed event similar to "Black Monday" occurred.



Level I: Level I LCRs were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred.

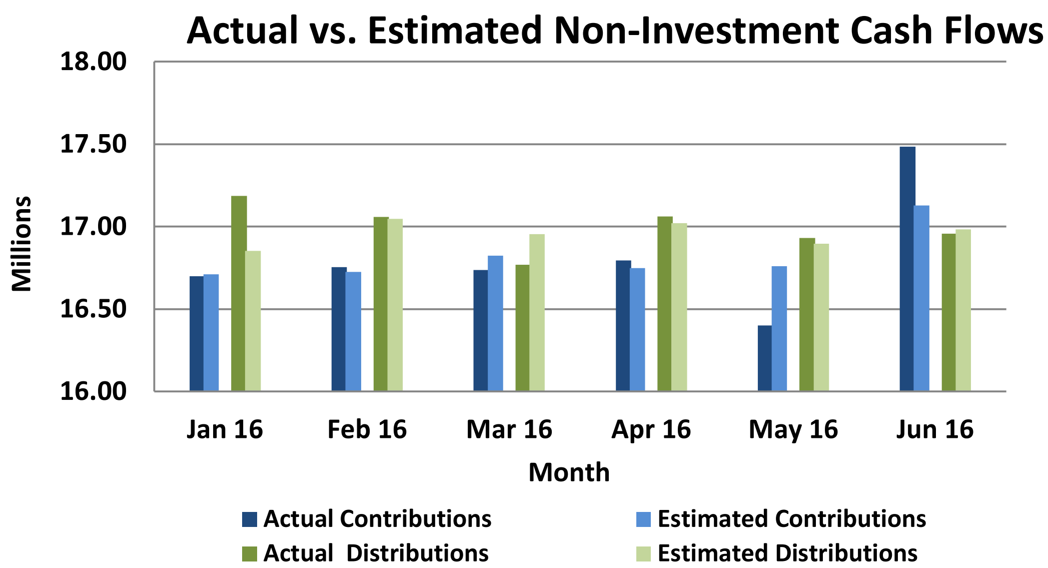
Reserves: Level I and Reserves were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred.

Overall JRF I Liquidity Health

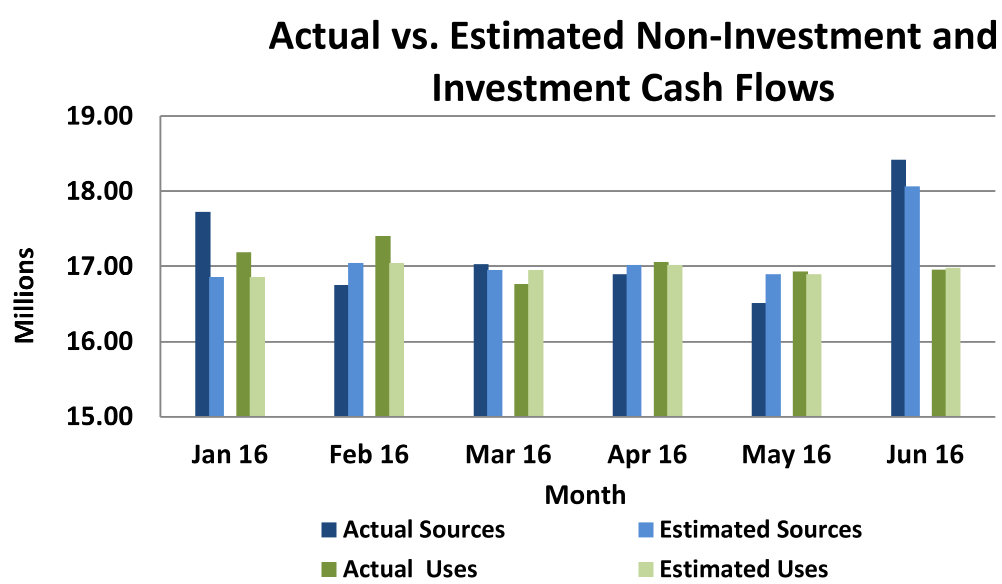
Based on Q3 and Q4 Coverage Ratio Analysis:

- ✓ JRF I was able to make payments for benefits and operating expenses regardless of market conditions.
- ✓ JRF I's liquidity remained above the threshold in the normal environment.
- ✓ JRF I's liquidity was adequate in stressed environments.
- ✓ Staff will continue to monitor JRF I's liquidity health using LCRs.

JRF I Cash Flow Forecasting



Cash flow forecasting accuracy was in the 90th percentile for February, March, and April. January's variance was due to unforecasted Extended Service Incentive Program (ESIP) payments. ESIP payments are separate from the judges' service retirement and are incentive to not retire early. May's variance was due to unforecasted Medicare reimbursements and member contributions. June's increase was due to an inflow from a litigation settlement.



Cash flow forecasting for total fund cash activities (both non-investment and investment) were slightly volatile. In January, a $1mm inflow was generated to cover unforecasted ESIP payments. May's variance was due to unforecasted Medicare reimbursements and member contributions. June's increase was due to an inflow from a litigation settlement.

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Judges' Retirement Fund II (JRF II)

The JRF II provides retirement benefits to California Supreme and Appellate Court Justices and Superior Court Judges first appointed or elected on or after November 9, 1994. This system provides a unique combination of two basic types of retirement benefits: a defined benefit plan and a monetary credit plan. The benefit payment is comprised of member contributions and a portion of employer contributions, plus interest. Monetary credits are incentives for judges to stay in their current position and are lump-sum payments.

Liquidity Coverage Ratio Analysis

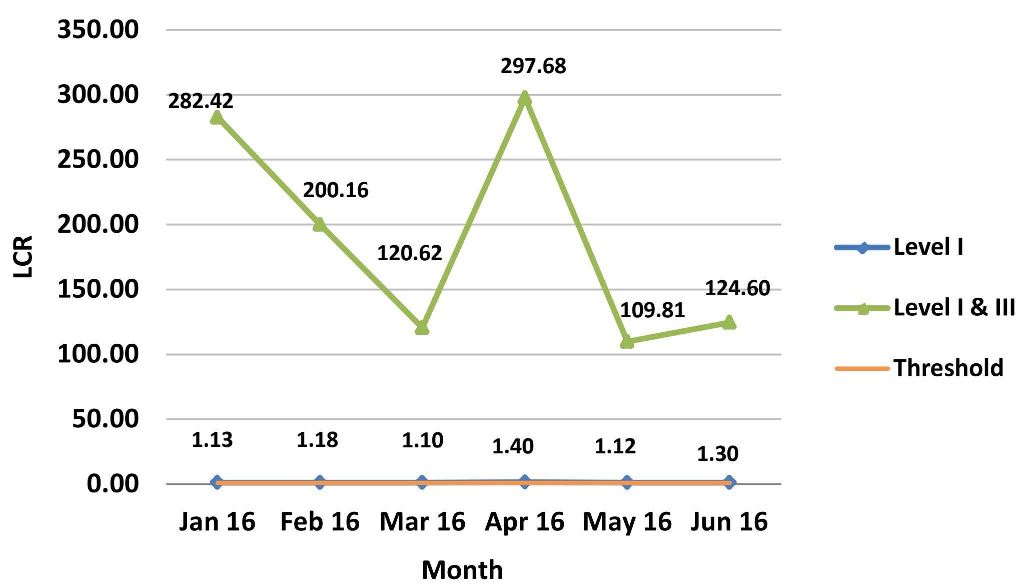
$$\text{Liquidity Coverage Ratios (LCR)} = \frac{\text{cash + assets convertible to cash + incoming cash sources}}{\text{outgoing cash uses + contingent cash uses}}$$

Funding Sources

Level I: Cash and Cash Equivalents
Level III: Sale of Public Assets
Threshold: Indicates the Fund's ability to cover 100% of monthly obligations

Normal Environment - 30-Day Liquidity Coverage Ratios

The 30-day LCR included investment and non-investment available cash flows.



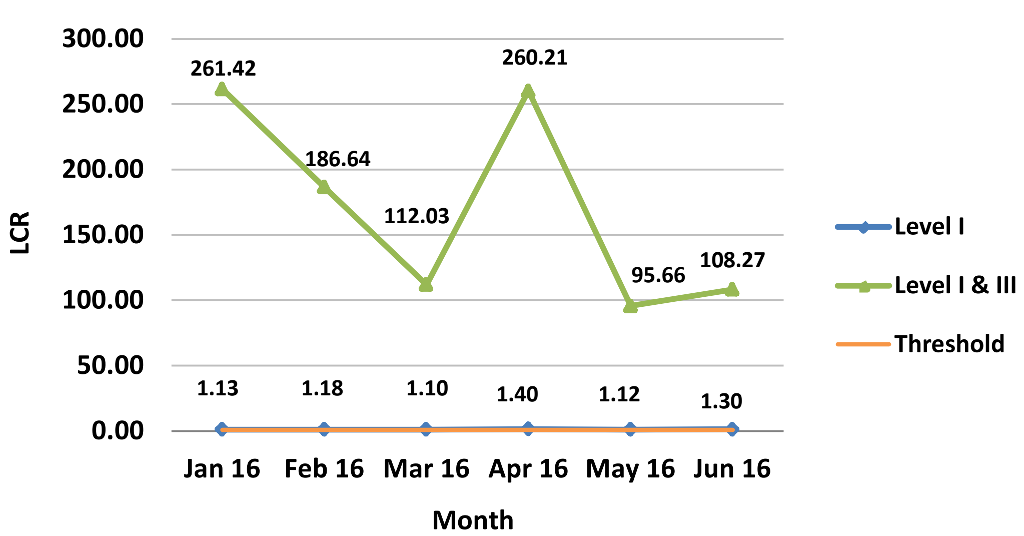
Level I: Level I LCRs remained above the threshold. The Fund does not maintain any private market investments or unfunded commitments which results in an LCR at or just above 1.0.

Level I & III: Since Level I LCRs remained above the threshold, it was not necessary to utilize Level III assets. The decreases to Level III assets in February, March and May were due to monetary credit payments. The increases in January and April were due to an increase to the market value of assets and no monetary credit payments.

Stressed Environments - 30-Day Liquidity Coverage Ratios

Stressed environment LCR scenarios were calculated assuming starting assets were stressed by the percentages actually experienced over 5 days in the 1987 market crash and 30 days during September 2008. Starting assets were further reduced by a transactional liquidity % equal to the estimated % of the assets that could have been liquidated during the 30-day period. Under the stressed scenarios, asset class sources were reduced to zero.

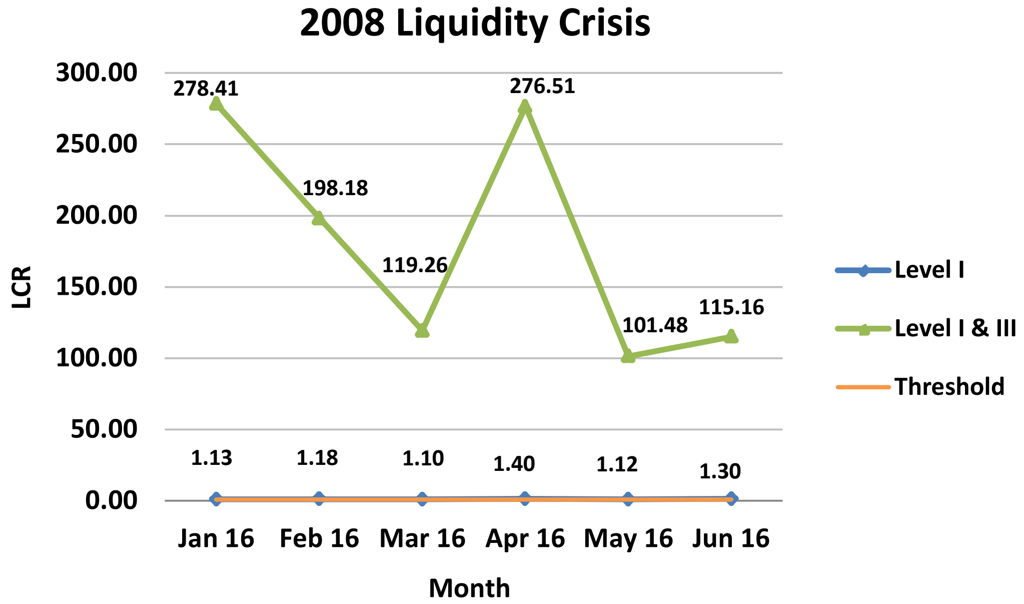
1987 Market Crash "Black Monday"



Level I: Level I LCRs were adequate had a stressed event similar to "Black Monday" occurred. The Fund does not maintain any private market investments or unfunded commitments which results in an LCR at or just above 1.0.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to "Black Monday" occurred. The decreases to Level III assets in February, March and May were due to monetary credit payments. The increases in January and April were due to an increase to the market value of assets and no monetary credit payments.

2008 Liquidity Crisis

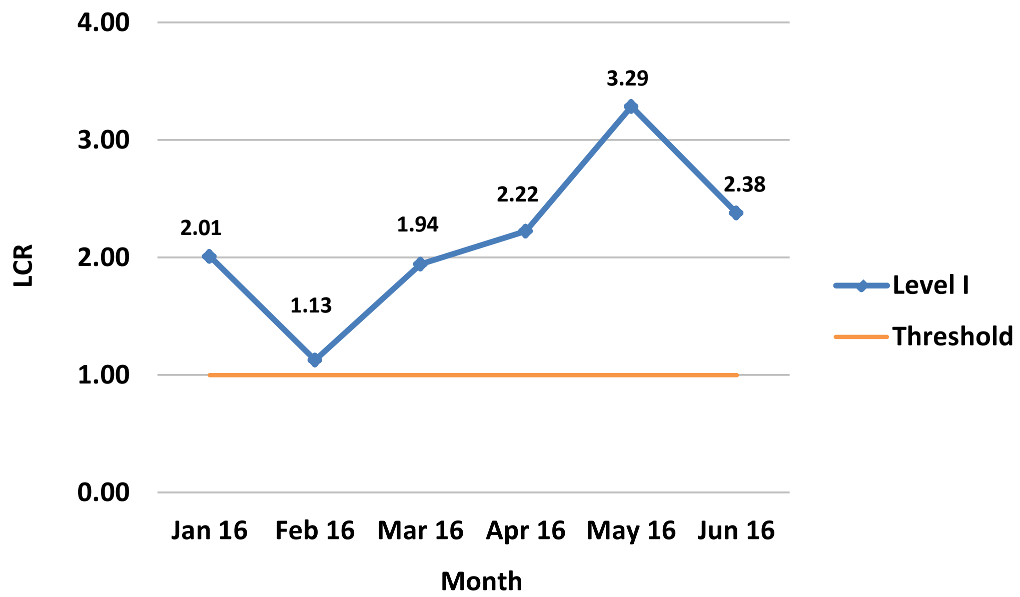


Level I: Level I LCRs were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. The Fund does not maintain any private market investments or unfunded commitments which results in an LCR at or just above 1.0.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. The decreases to Level III assets in February, March and May were due to monetary credit payments. The increases in January and April were due to an increase to the market value of assets and no monetary credit payments.

Crisis Environment - 10-Day Liquidity Coverage Ratios

The 10-day LCR utilized only the cash balance ten days prior to the payment date. The calculation assumed a five business day market lockdown as experienced on September 11th, 2001.



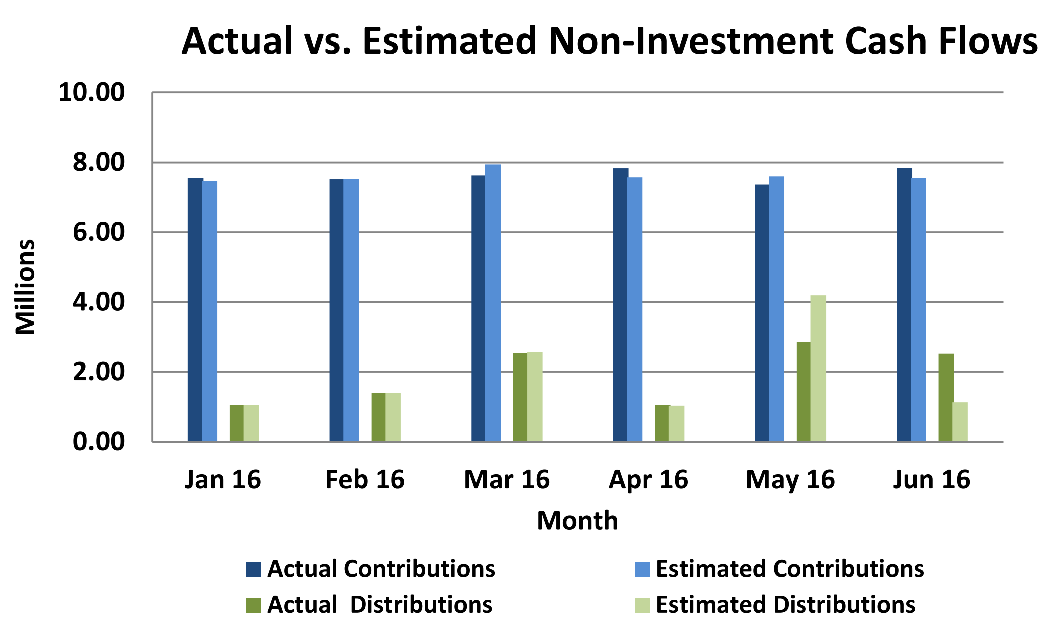
Level I: The JRF II had sufficient cash to cover obligations ten days prior to the payment date. This indicated Level I was adequate had a crisis event occurred. The LCR increased due to inflows from member contributions. Fluctuations in LCRs were due to timing of cash flows. In a crisis environment, CalPERS would not have access to Level III assets since it is assumed there was a five business day market lockdown similar to September 11th, 2001.

Overall JRF II Liquidity Health

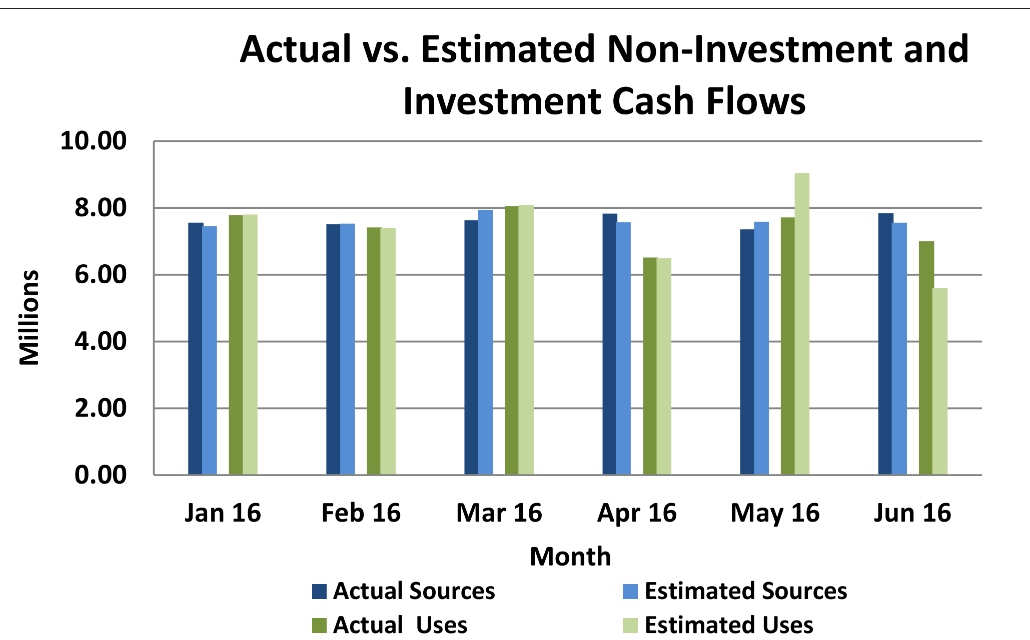
Based on Q3 and Q4 Coverage Ratio Analysis:

- ✓ JRF II was able to make payments for benefits and operating expenses regardless of market conditions.
- ✓ JRF II's liquidity remained above the threshold in the normal environment.
- ✓ JRF II's liquidity was adequate in stressed and crisis environments.
- ✓ Staff will continue to monitor JRF II's liquidity health using LCRs.

JRF II Cash Flow Forecasting



With the exception of May and June, cash flow forecasting accuracy was in the 90th percentile. The increased distributions in March, May and June were due to monetary credit payments. Distribution variances in May and June were due to the timing of forecasted monetary credit payments.



Non-investment and investment cash flow forecasting was consistent for Q3 and Q4. The increased distributions in March and May were due to monetary credit payments. No monetary credit payments were made April. Distribution variances in May and June were due to the timing of forecasted monetary credit payments.

Semi-Annual Treasury Analysis and Liquidity Status Report

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Health Care Fund (HCF) / Contingency Reserve Fund (CRF)

The Health Care Fund accounts for the activities of the CalPERS self-insured health care programs. Health premiums are collected from employers and members and used to directly pay for medical services and pharmaceutical usage. The Contingency Reserve Fund was established to fund administrative costs related to the CalPERS health care programs and to provide a contingency reserve for potential increases in future health care premium rates or health care benefit costs. Since the CRF acts as a reserve fund for the HCF, activities for both funds are combined into one report.

Liquidity Coverage Ratio Analysis

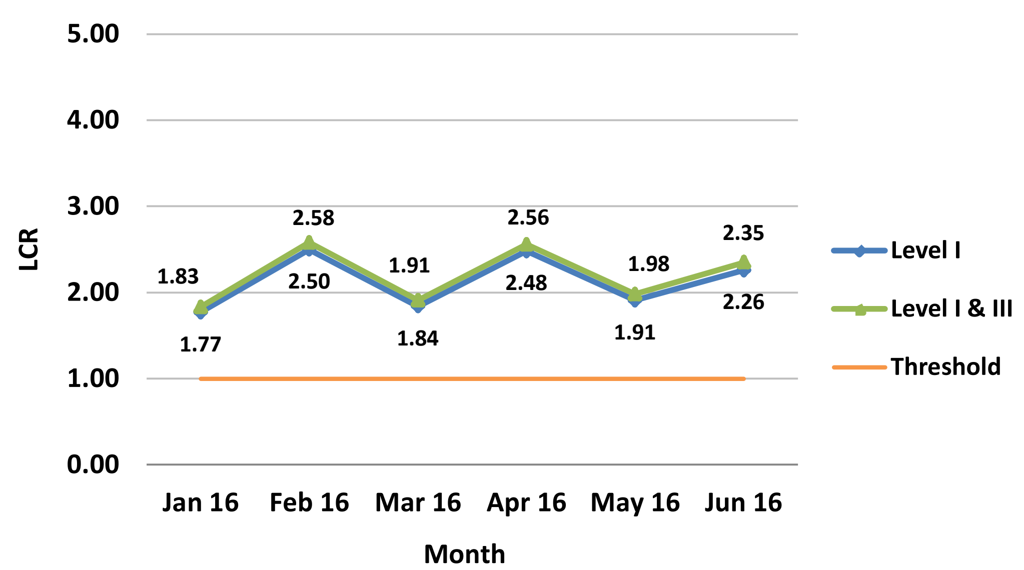
$$\text{Liquidity Coverage Ratios (LCR)} = \frac{\text{cash + assets convertible to cash + incoming cash sources}}{\text{outgoing cash uses + contingent cash uses}}$$

Funding Sources and Graph Details

Level I: Cash and Cash Equivalents
Level III: Sale of Public Assets
Threshold: Indicates the Fund's ability to cover 100% of monthly obligations

Normal Environment - 30-Day Liquidity Coverage Ratios

The 30-day LCR included investment and non-investment available cash flows.

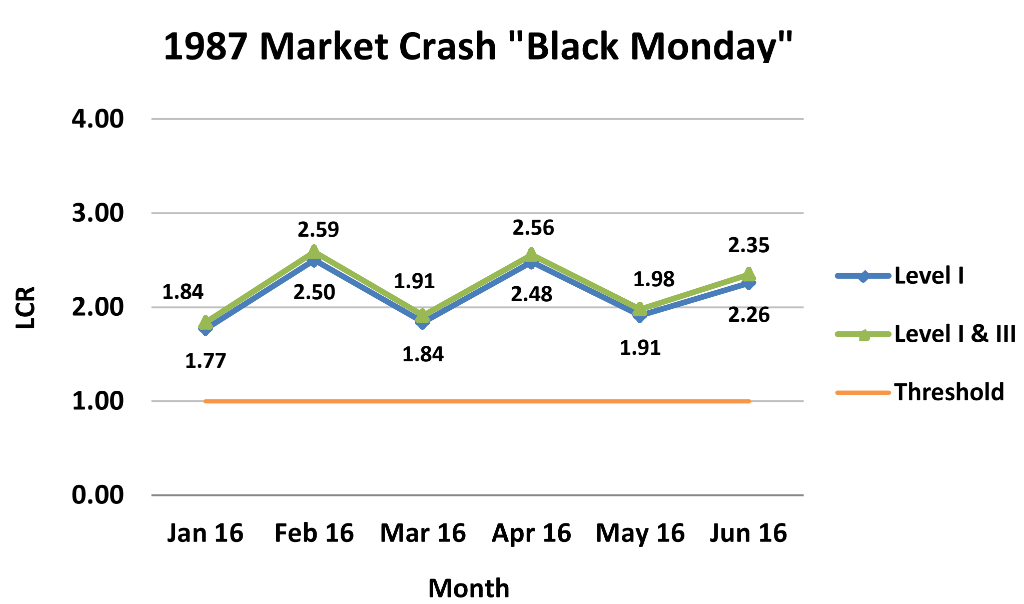


Level I: Level I LCRs remained above the threshold. The Fund maintained adequate inflows to cover monthly liabilities.

Level I & III: Since Level I LCRs remained above the threshold, it was not necessary to utilize Level III assets.

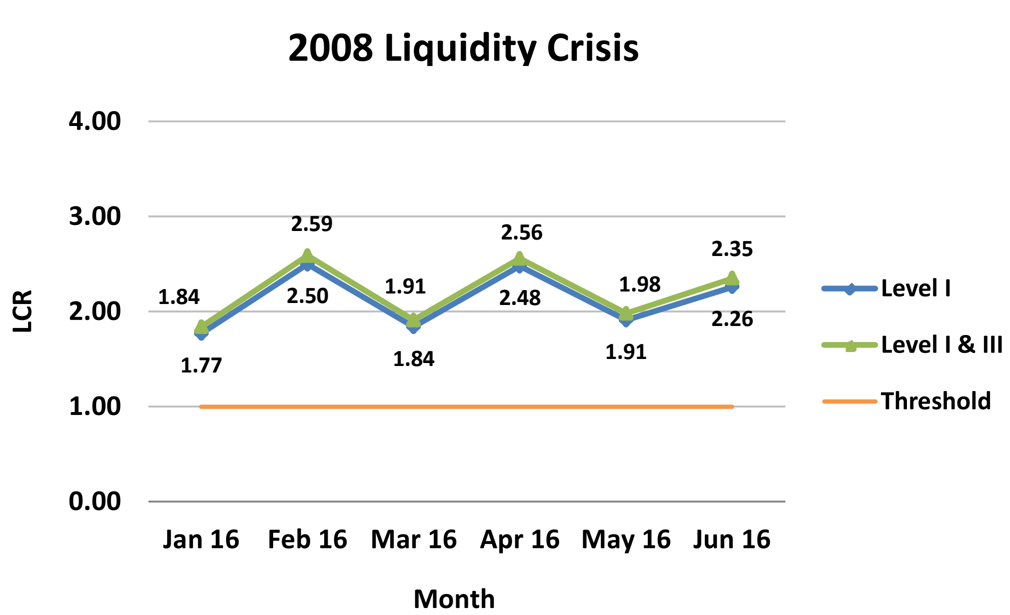
Stressed Environments - 30-Day Liquidity Coverage Ratios

Stressed environment LCR scenarios were calculated assuming starting assets were stressed by the percentages actually experienced over 5 days in the 1987 market crash and 30 days during September 2008. Starting assets were further reduced by a transactional liquidity % equal to the estimated % of the assets that could have been liquidated during the 30-day period. Under the stressed scenarios, asset class sources were reduced to zero.



Level I: Level I LCRs were adequate had a stressed event similar to "Black Monday" occurred. Since 100% of Level I assets for CRF were held in cash and cash equivalents, stress factors did not apply and the LCRs remained the same as the normal environment.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to "Black Monday" occurred. Since 100% of Level III assets for HCF were held in cash and cash equivalents and fixed income, stress factors had a minimal impact to LCRs.



Level I: Level I LCRs were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. Since 100% of Level I assets for CRF were held in cash and cash equivalents, stress factors did not apply and the LCRs remained the same as the normal environment.

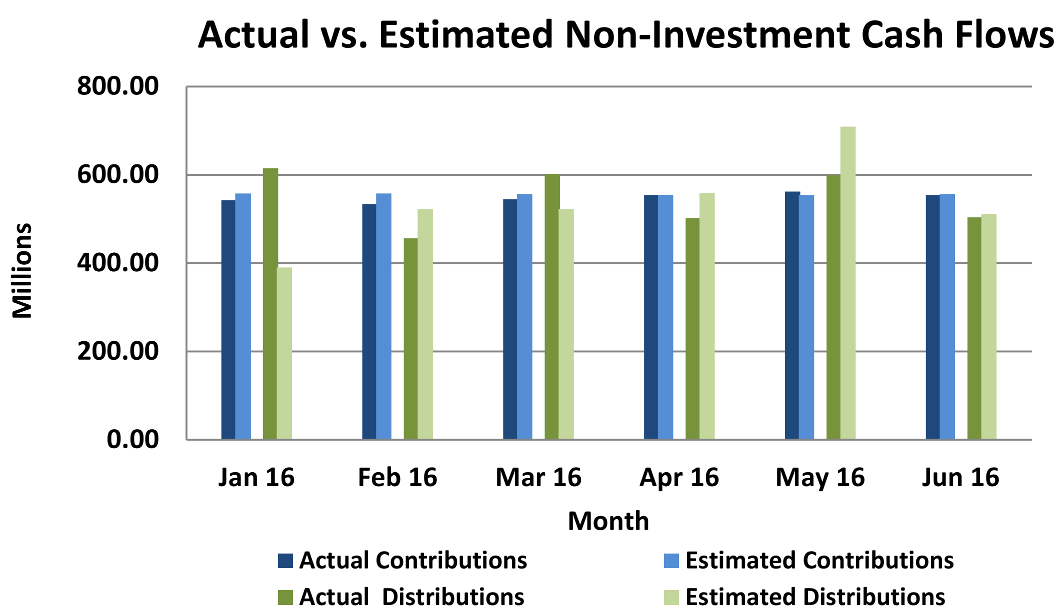
Level I & III: Level I and III assets were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. Since 100% of Level III assets for HCF were held in cash and cash equivalents and fixed income, stress factors had a minimal impact to LCRs.

Overall HCF Liquidity Health

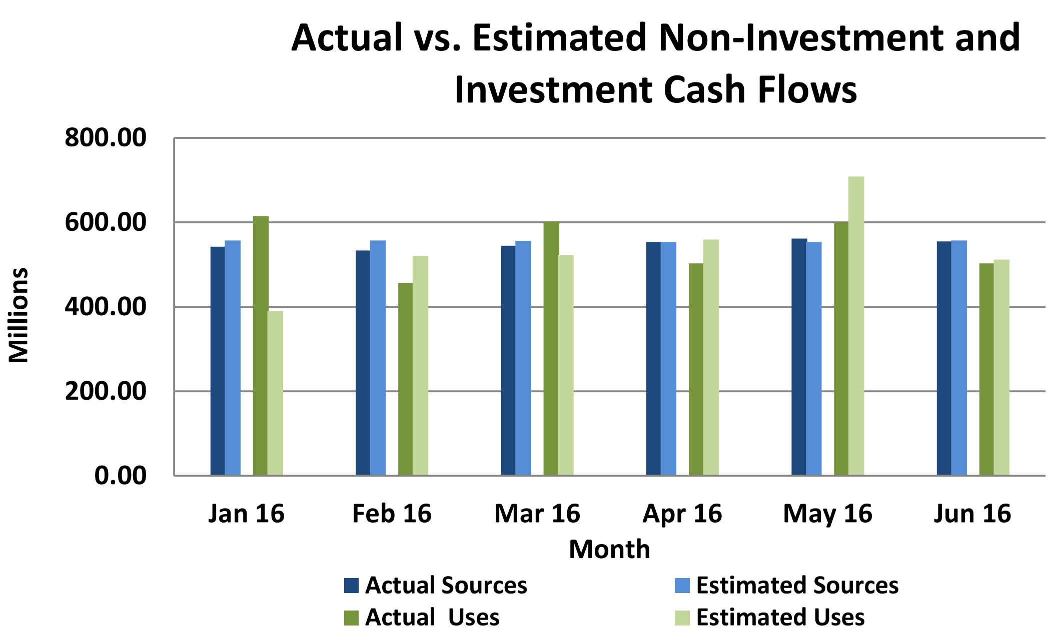
Based on Q3 and Q4 Coverage Ratio Analysis:

- ✓ HCF and CRF were able to make payments for health premiums, medical claims and operating expenses regardless of market conditions.
- ✓ HCF's and CRF's liquidity remained above the threshold in the normal environment.
- ✓ HCF's and CRF's liquidity were adequate in stressed environments.
- ✓ Staff will continue to monitor HCF's and CRF's liquidity health using LCRs.

HCF Cash Flow Forecasting



With the exception of January and May, cash flow forecasting accuracy was in the 90th percentile. January's and May's variance was due to the delayed payment of medical pharmacy fees.



Cash flow forecasting for total fund cash activities (both non-investment and investment) was slightly volatile. Components that drove the volatility were medical service claims, pharmaceutical claims and administrative costs.

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Long Term Care Fund (LTCF)

The LTCF provides financial protection to active participants from the high cost of covered services caused by chronic illness, injury or old age. Long-Term Care products reimburse the cost for covered personal care (activities of daily living) services such as bathing, dressing, toileting, transferring, continence and eating, which are not typically covered by traditional health insurance or Medicare. LTCF participation is voluntary and benefits are funded by member premiums and the LTCF investment income.

Liquidity Coverage Ratio Analysis

$$\text{Liquidity Coverage Ratios (LCR)} = \frac{\text{cash + assets convertible to cash + incoming cash sources}}{\text{outgoing cash uses + contingent cash uses}}$$

Funding Sources and Graph Details

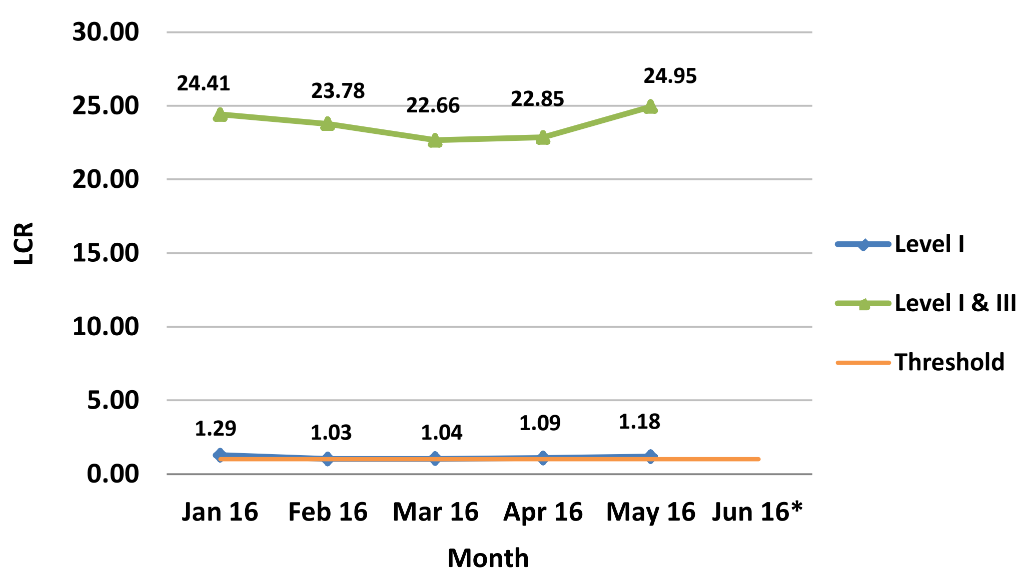
Level I: Cash and Cash Equivalents

Level III: Sale of Public Assets

Threshold: Indicates the Fund's ability to cover 100% of monthly obligations

Normal Environment - 30-Day Liquidity Coverage Ratios

The 30-day LCR included investment and non-investment available cash flows.

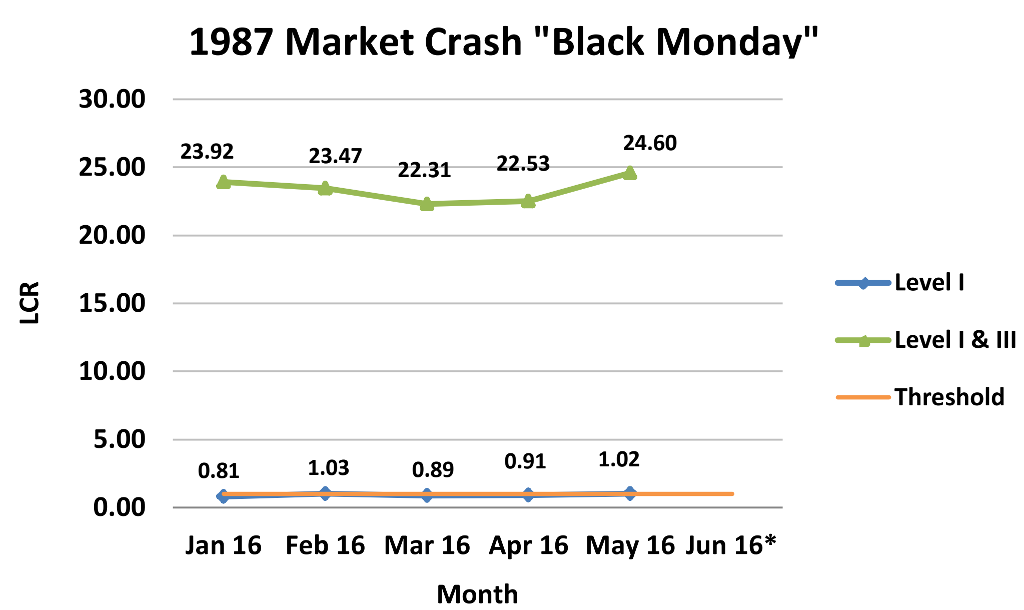


Level I: Level I LCRs remained above the threshold. The Fund does not maintain any private market investments or unfunded commitments which results in an LCR at or just above 1.0. The Fund relies on the planned sale of assets to pay claims.

Level I & III: Since Level I LCRs remained above the threshold, it was not necessary to utilize Level III assets.

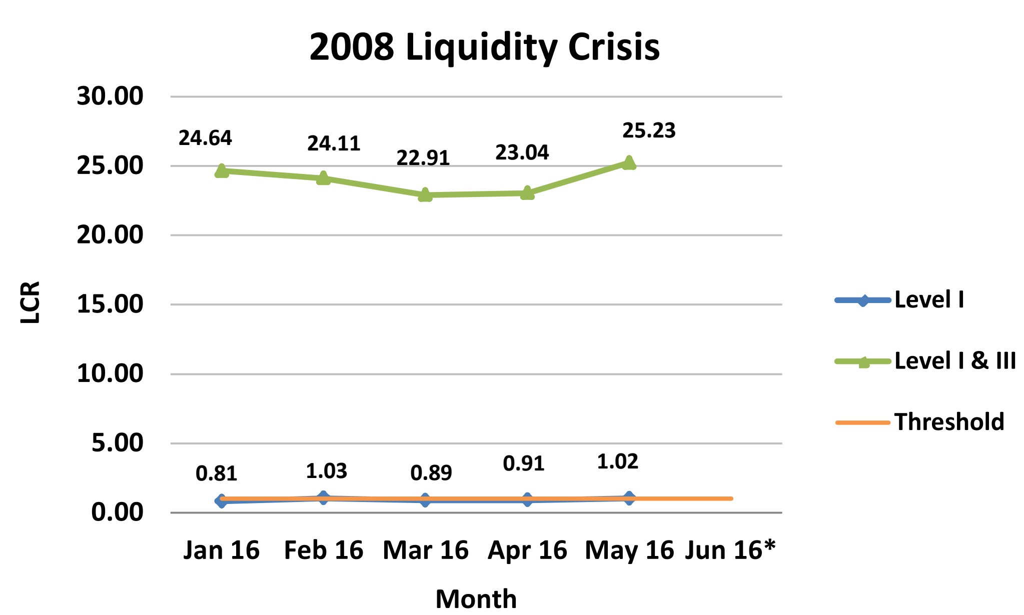
Stressed Environments - 30-Day Liquidity Coverage Ratios

Stressed environment LCR scenarios were calculated assuming starting assets were stressed by the percentages actually experienced over 5 days in the 1987 market crash and 30 days during September 2008. Starting assets were further reduced by a transactional liquidity % equal to the estimated % of the assets that could have been liquidated during the 30-day period. Under the stressed scenarios, asset class sources were reduced to zero.



Level I: With the exception of February and May, Level I assets were inadequate had an event similar to "Black Monday" occurred. The LCRs fell below the threshold since this scenario assumed no investment inflows. The Fund relies on the planned sale of assets to pay claims.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to "Black Monday" occurred.



Level I: With the exception of February and May, Level I assets were inadequate had an event similar to the 2008 Liquidity Crisis occurred. The LCRs fell below the threshold since this scenario assumed no investment inflows. The Fund relies on the planned sale of assets to pay claims.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred.

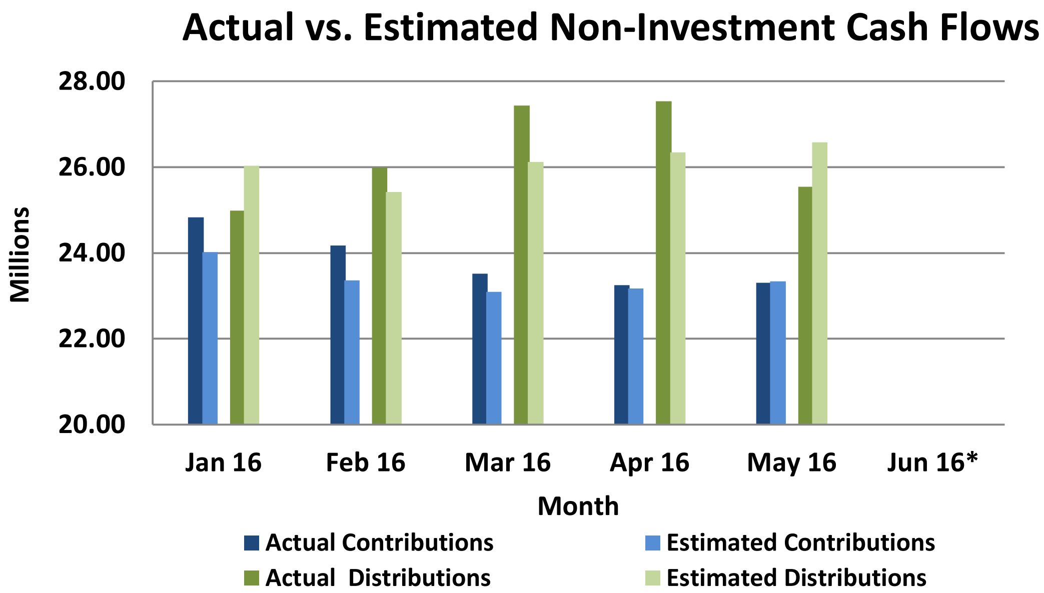
**June actuals are not reported due to limitations associated with the reporting schedules and data sources used to create this report.*

Overall LTCF Liquidity Health

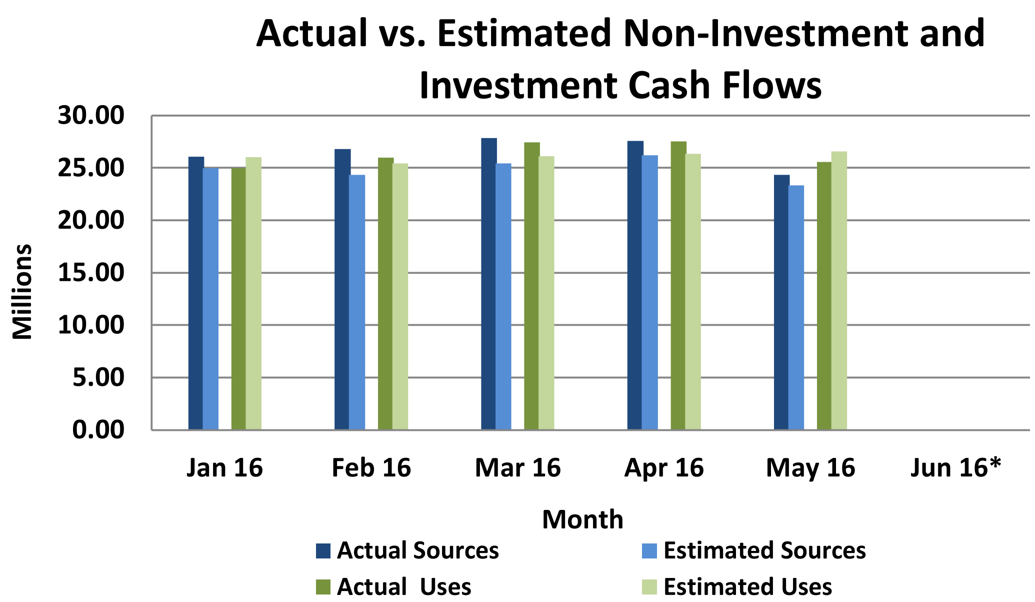
Based on Q3 and Q4 Coverage Ratio Analysis:

- ✓ LTCF was able to make payments for benefits and operating expenses regardless of market conditions.
- ✓ LTCF's liquidity remained above the threshold in the normal environment.
- ✓ LTCF would have needed to sell public assets to meet monthly obligations in both stressed environments.
- ✓ Staff will continue to monitor LTCF's liquidity health using LCRs.

LTCF Cash Flow Forecasting



Month-to-month cash flow forecasting for the LTCF was consistently in the 90th percentile. Actual distributions exceed actual contributions in every month.



Non-investment and investment cash flow forecasting was consistent for Q3 and Q4.

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