Treasury Analysis and Liquidity Status Report

Prepared for: Enterprise Treasury Team - Period ending June 30, 2017

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. Changes in investment asset allocation and investment strategies can significantly impact data reported from period to period.

Liquidity Coverage Ratio Analysis

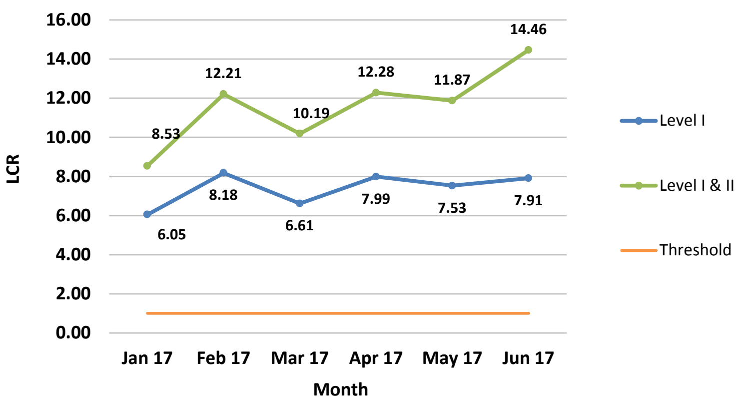
$$\text{Liquidity Coverage Ratios (LCR)} = \frac{\text{cash + assets convertible to cash + incoming cash sources}}{\text{outgoing cash uses + contingent cash uses}}$$

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.



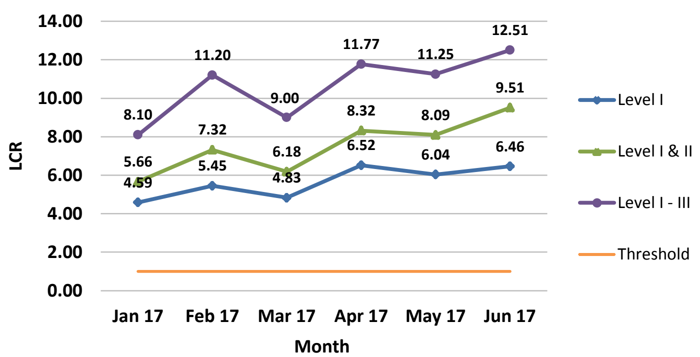
Level I: Level I LCR exceeded the threshold in January through June. February LCR increased due to a $3.5B transition from Global Equity to Liquidity. March LCR decreased due to an increase in private asset uses. April LCR increased due to quarterly state contributions and a decrease in private asset uses.

Level I & II: Since Level I LCR remained above the threshold, it was not necessary to utilize Level II assets in January through June.

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.

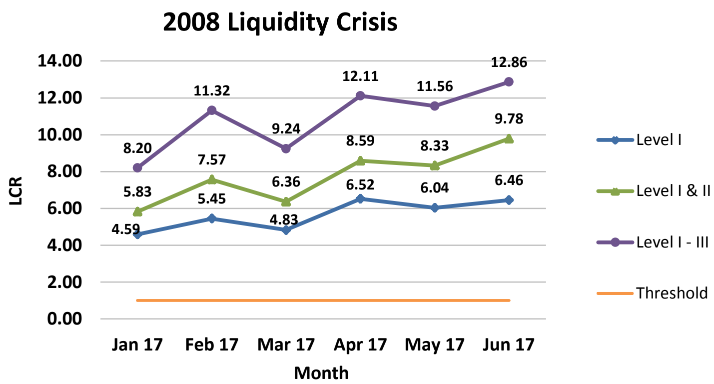
1987 Market Crash "Black Monday"



Level I: In January through June, Level I LCRs were adequate had a stressed event similar to "Black Monday" occurred.

Level I & II: CalPERS would not have needed to utilize Level II assets.

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



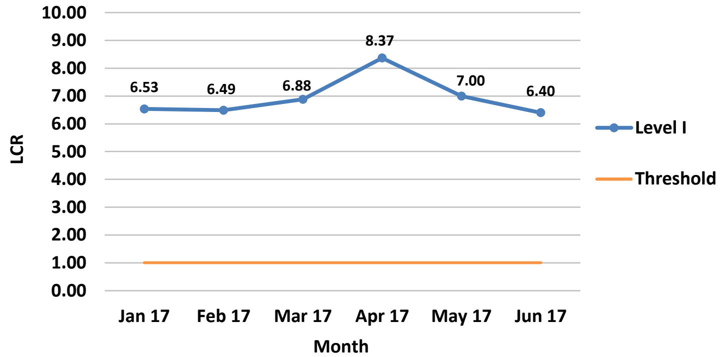
Level I: In January through June, Level I LCRs were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred.

Level I & II: CalPERS would not have needed to utilize Level II assets.

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.



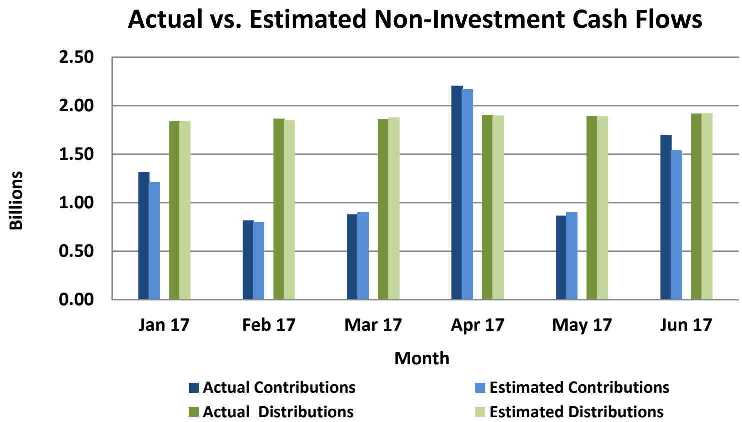
Level I: The PERF had sufficient cash to cover obligations ten days prior to the funding of member benefits in January through June. This indicated Level I was adequate had a crisis event occurred. April's LCR increased due to an increase cash held a bank and an increase in private asset sources. In 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

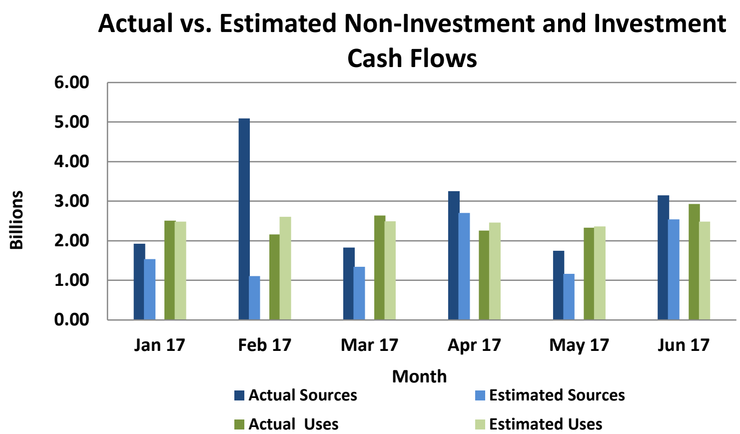
Coverage Ratio Analysis:

- ✓ 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 and was adequate in stressed and crisis environments.

PERF Cash Flow Forecasting



January, April and June's actual contributions were slightly greater than estimated contributions due to greater than expected contributions from public agencies and schools. February through May actual vs. estimated contributions and distributions were in the 90th percentile.



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. February's sources variance reflects the $3.5B transition from Global Equity to Liquidity.

Treasury Analysis and Liquidity Status Report

Prepared for: Enterprise Treasury Team - Period ending June 30, 2017

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

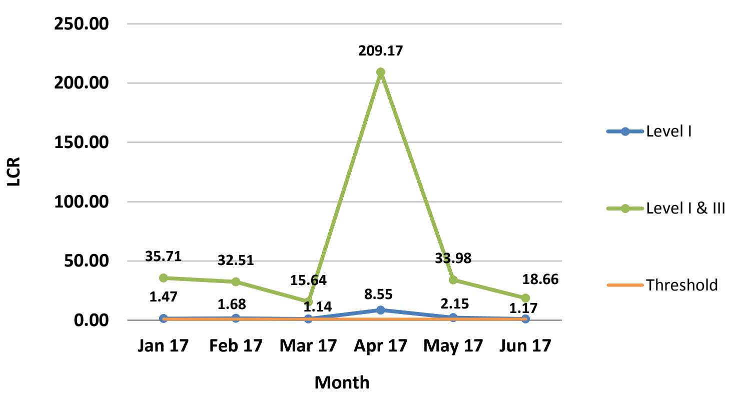
Level I: Cash and cash equivalents

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.



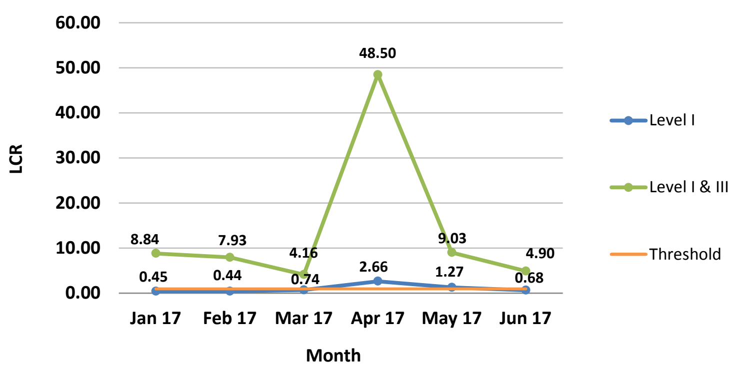
Level I: Level I LCR remained above the threshold in January through June. The Fund does not maintain any private market investments therefore Level I LCRs were consistently at or just above 1.0. March LCR decreased due to the timing of member benefit payments, which included February's EFT benefit payment. April LCR increased significantly because the monthly EFT benefit and tax payments occurred in March.

Level I & III: Since Level I LCR remained above the threshold, it was not necessary to utilize Level III assets. April's significant increase was due to the timing of benefit and tax payments which occurred in March.

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.

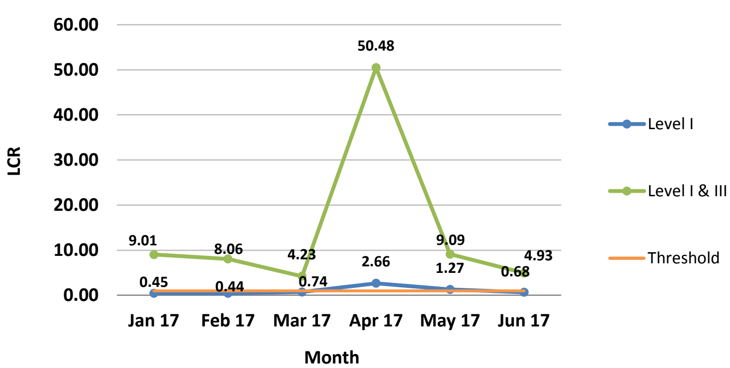
1987 Market Crash "Black Monday"



Level I: Level I assets would have been inadequate had a stressed event similar to "Black Monday" occurred. With the exception of April and May, LCRs consistently fell below the threshold since this scenario assumes 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. April's significant increase was due to the timing of benefit and tax payments which occurred in March.

2008 Liquidity Crisis

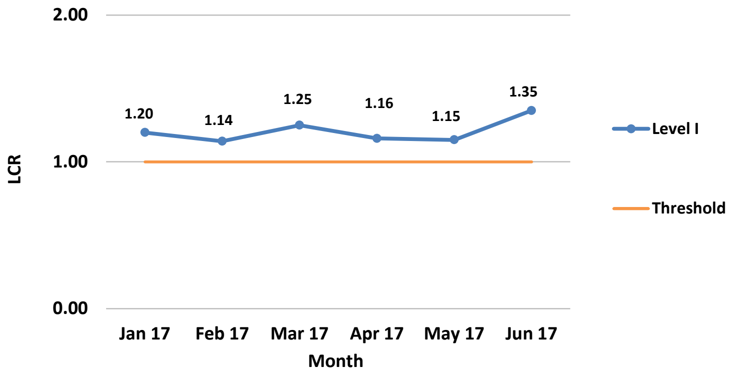


Level I: Level I assets would have been inadequate had a stressed event similar to the 2008 Liquidity Crisis occurred. With the exception of March, LCRs consistently fell below the threshold since this scenario assumed no investment inflows. This is a closed fund and relies on the planned sale of assets 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. April's significant increase was due to the timing of benefit and tax payments which occurred in March.

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.



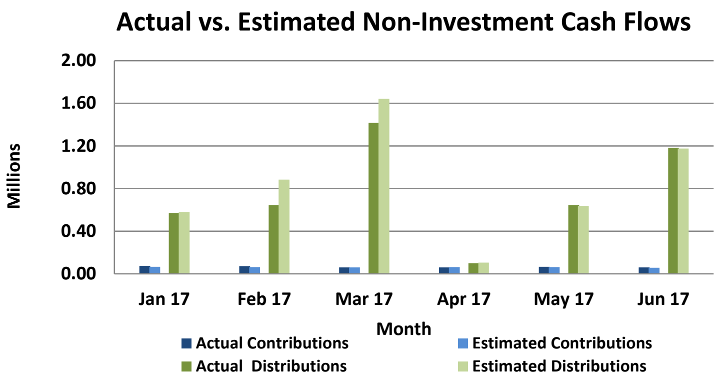
Level I: The LRF had sufficient cash to cover obligations ten days prior to the payment date. This indicated Level I would have been adequate had a crisis event occurred. In a crisis environment, CalPERS would not have access to Level III assets since it is assumed there was a five business day market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

Overall LRF Liquidity Health

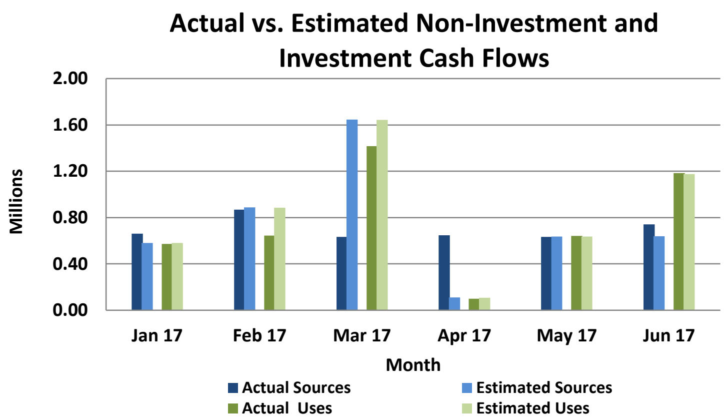
Coverage Ratio Analysis:

- ✓ 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 environments.
- ✓ LRF would have needed to sell public assets to meet monthly obligations in both stressed environments.

LRF Cash Flow Forecasting



In January and May, cash flow forecasting accuracy was in the 90th percentile. February, March, April and June's distribution variance was due to the timing of benefit payments.



February and March uses variance was due to timing of benefit payments.

Treasury Analysis and Liquidity Status Report

Prepared for: Enterprise Treasury Team - Period ending June 30, 2017

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

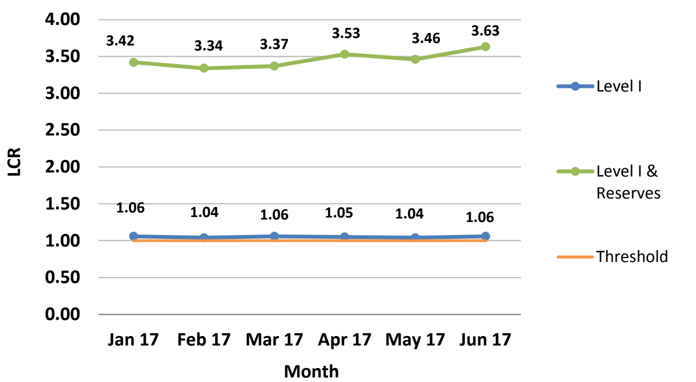
Level I: Cash and cash equivalents

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.



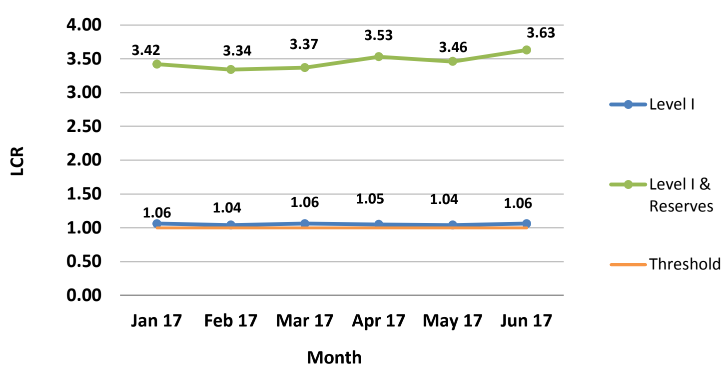
Level I: Level I LCRs remained above the threshold in January through April. The Fund maintained adequate inflows to cover monthly liabilities.

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.

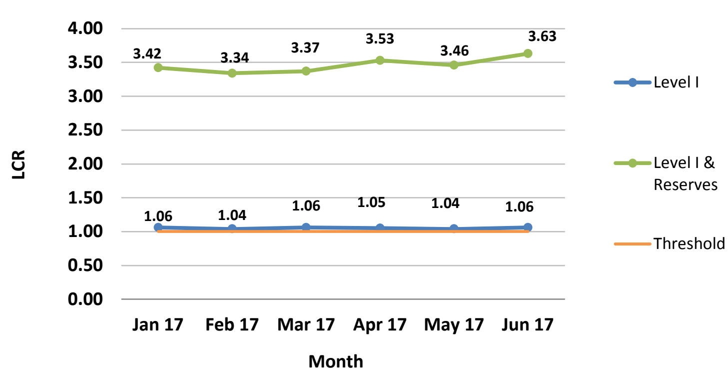
1987 Market Crash "Black Monday"



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.

2008 Liquidity Crisis



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

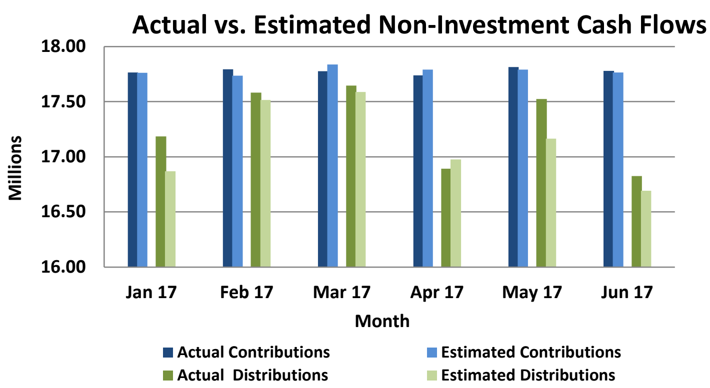
Reserves: Level I and Reserves were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred.

Overall JRF I Liquidity Health

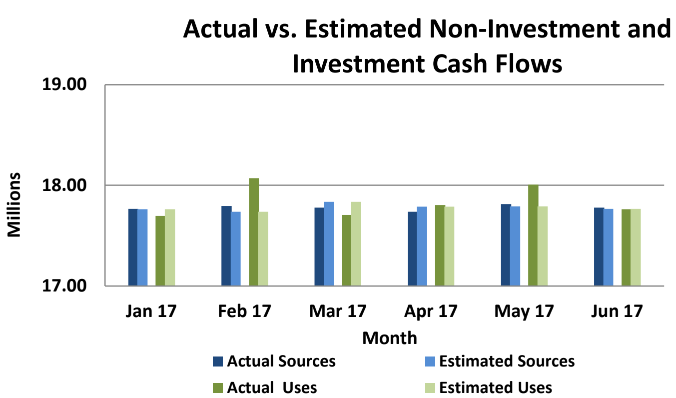
Based Coverage Ratio Analysis:

- ✓ 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 and was adequate in both stressed environments.

JRF I Cash Flow Forecasting



January's and May's distribution variance was due to greater than expected ESIP (Extended Service Incentive Program) payments. February through April's actual vs. estimated contributions and distributions were in the 90th percentile.



Estimated sources were in the 90th percentile. February's uses variance was due to was due to greater than expected benefit payment. May's uses variance was due to greater than expected ESIP payments.

Treasury Analysis and Liquidity Status Report

Prepared for: Enterprise Treasury Team - Period ending June 30, 2017

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.

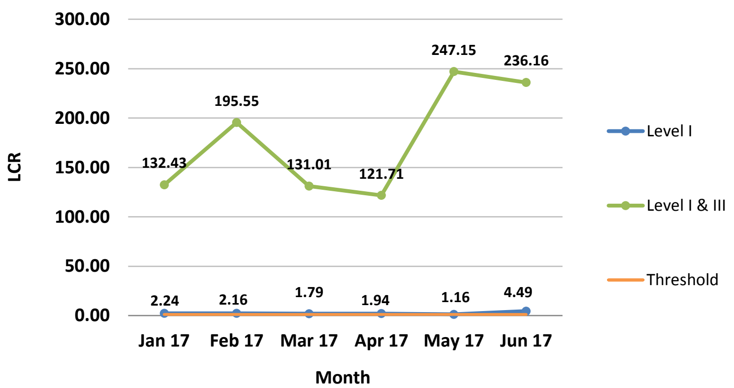
Liquidity Coverage Ratio Analysis

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

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.



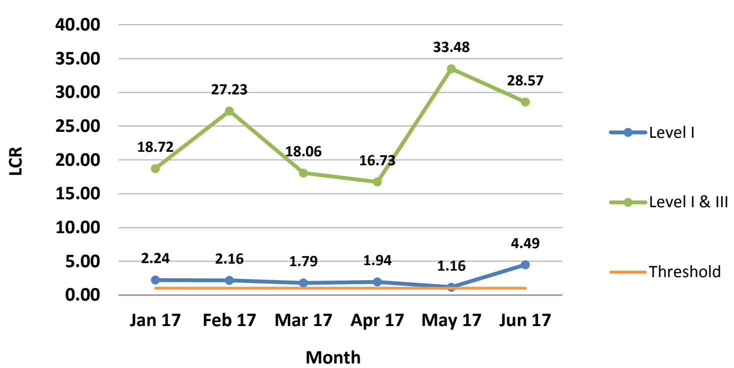
Level I: Level I LCRs remained above the threshold in January through April. The Fund does not maintain any private market investments therefore Level I LCRs were consistently at or just above 1.0. The increase in June was due to the timing of a monthly investment transfer.

Level I & III: Since Level I LCRs remained above the threshold, it was not necessary to utilize Level III assets. LCR fluctuations were due to monetary credit payments, which vary month to month and the timing of a monthly investment transfer.

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.

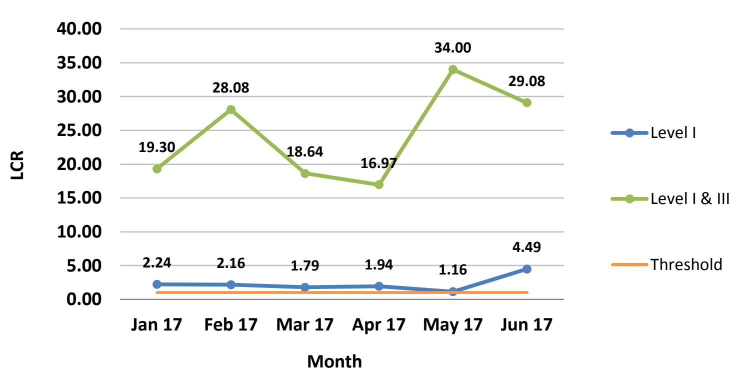
1987 Market Crash "Black Monday"



Level I: January through April Level I LCRs were adequate had a stressed event similar to "Black Monday" occurred. The Fund does not maintain any private market investments therefore Level I LCRs were consistently at or just above 1.0. The increase in June was due to the timing of a monthly investment transfer.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to "Black Monday" occurred. LCR fluctuations were due to monetary credit payments, which vary month to month and the timing of a monthly investment transfer.

2008 Liquidity Crisis

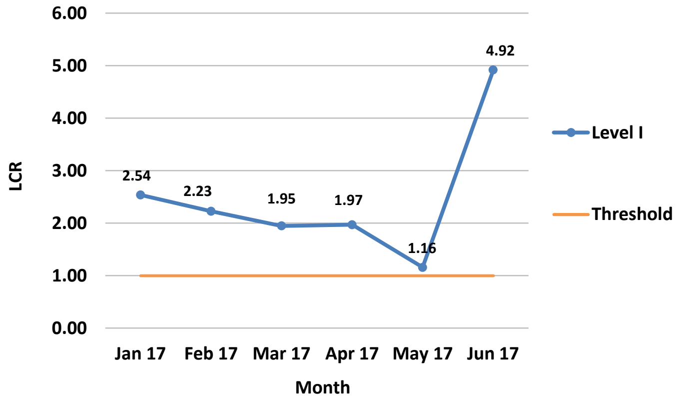


Level I: January through April Level I LCRs were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. The Fund does not maintain any private market investments therefore Level I LCRs were consistently at or just above 1.0. The increase in June was due to the timing of a monthly investment transfer.

Level I & III: Level I and Level III assets were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. LCR fluctuations were due to monetary credit payments, which vary month to month and the timing of a monthly investment transfer.

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.



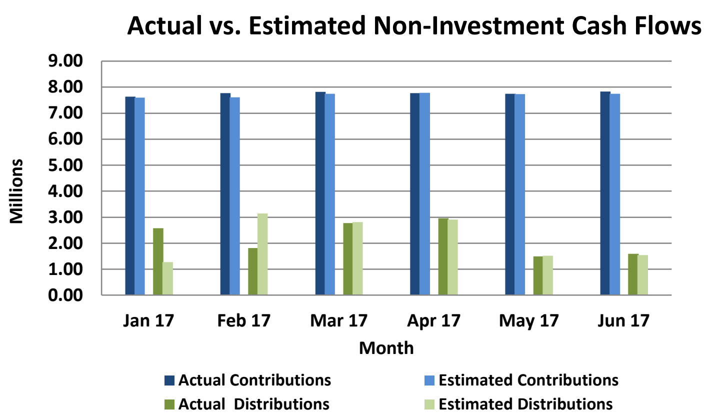
Level I: The JRF II had sufficient cash to cover obligations ten days prior to the payment date. This indicated Level I was adequate had a crisis event occurred. Fluctuations to May and June's LCRs were due to timing of the monthly investment transfer. In a crisis environment, CalPERS would not have 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

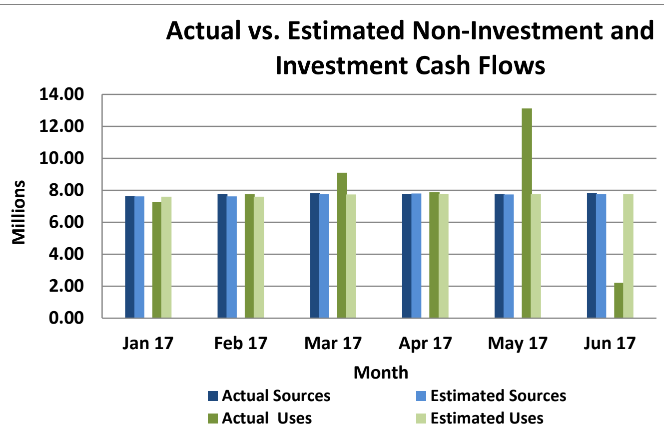
Coverage Ratio Analysis:

- ✓ 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 was adequate in stressed and crisis environments.

JRF II Cash Flow Forecasting



January's and February's distribution variance was due to fluctuations in forecasted monetary credit payments, which vary month to month. Actual vs. estimate contributions were in the 90th percentile.



Uses variance in May and June were due to the timing of the monthly investment transfer.

Treasury Analysis and Liquidity Status Report

Prepared for: Enterprise Treasury Team - Period ending June 30, 2017

CalPERS

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

The HCF 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 CRF 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

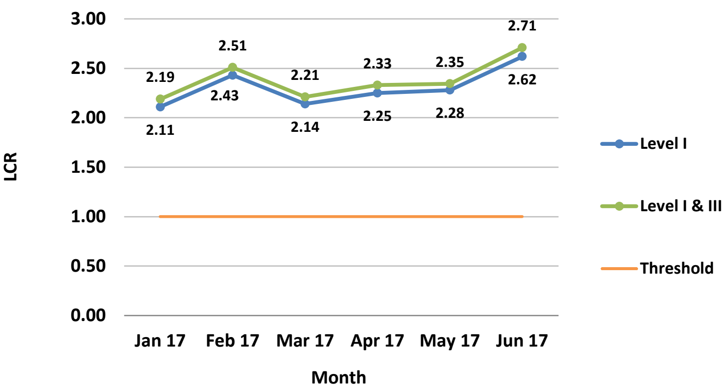
Level I: Cash and cash equivalents

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.



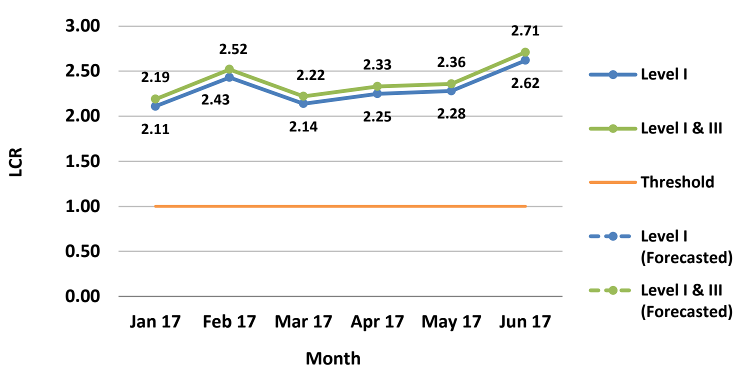
Level I: Level I LCRs remained above the threshold in January through June. The Fund maintained adequate inflows to cover monthly liabilities. February's LCR increase was due to a decrease in medical and pharmacy payments. The LCR increase in June reflects an increase in cash held at bank.

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.

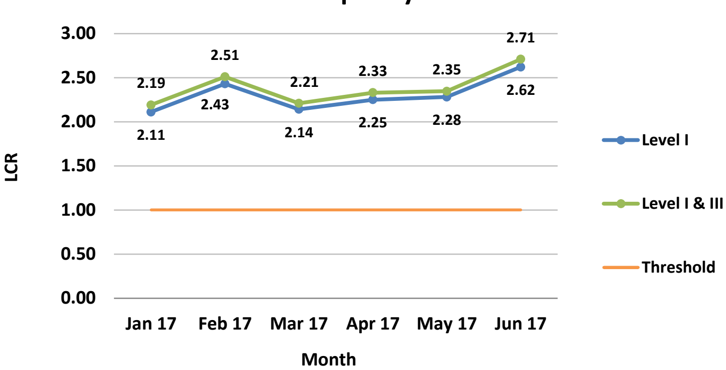
1987 Market Crash "Black Monday"



Level I: January through June 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.

2008 Liquidity Crisis



Level I: January through June 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.

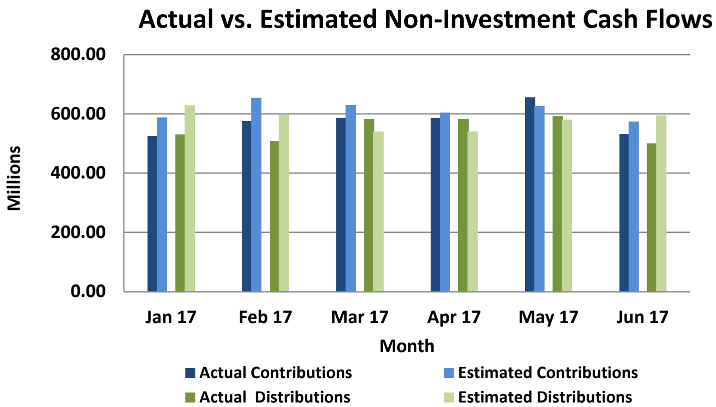
Level I & III: Level I and III assets were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred. Since 100% of Level III assets for HCF were held in cash and cash equivalents and fixed income, stress factors had a minimal impact to LCRs.

Overall HCF / CRF Liquidity Health

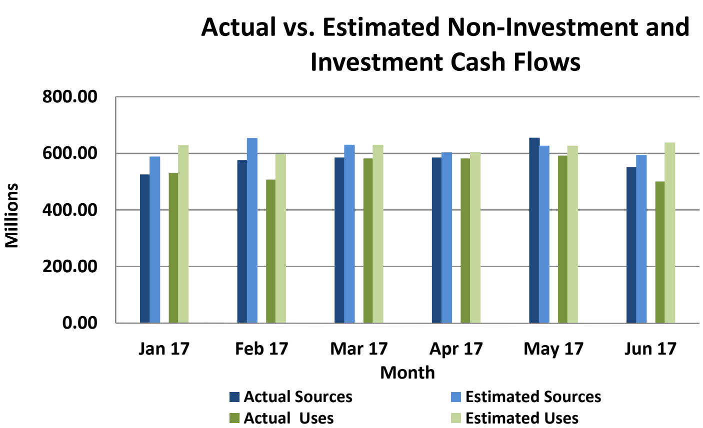
Coverage Ratio Analysis:

- ✓ 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 and were adequate in stressed environments.

HCF / CRF Cash Flow Forecasting



January through June's contribution variance was mainly due to fluctuations in reimbursements received. January and June's distribution variance was mainly due to fluctuations in capitation payments and administrative costs.



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

Treasury Analysis and Liquidity Status Report

Prepared for: Enterprise Treasury Team - Period ending June 30, 2017

CalPERS

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. LTCF participation is voluntary and benefits are funded by member premiums and the LTCF investment income.

Liquidity Coverage Ratio Analysis

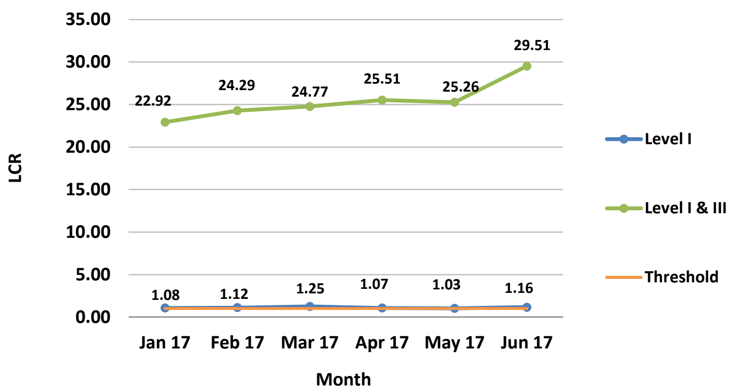
$$\text{Liquidity Coverage Ratios (LCR)} = \frac{\text{cash + assets convertible to cash + incoming cash sources}}{\text{outgoing cash uses + contingent cash uses}}$$

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.

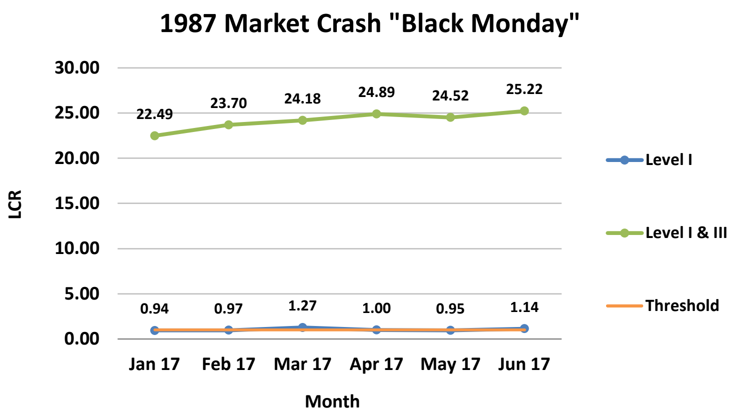


Level I: Level I LCRs remained above the threshold in January through May. The Fund does not maintain any private market investments therefore Level I LCRs were consistently at or just above 1.0.

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

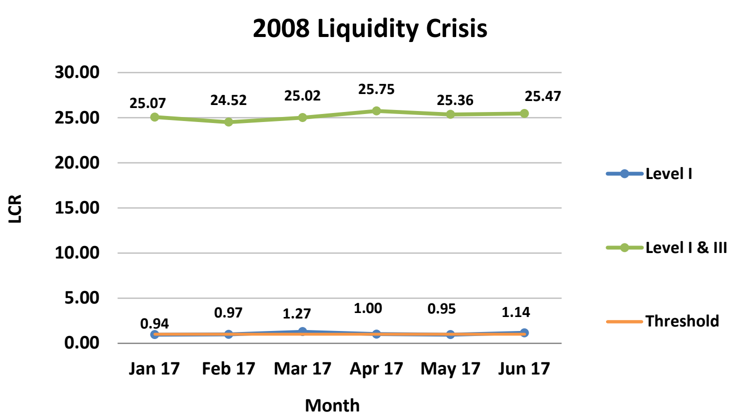
Stressed Environments - 30-Day Liquidity Coverage Ratios

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: January and May's Level I assets were inadequate had an event similar to "Black Monday" occurred. The LCR fell below the threshold since this scenario assumed no investment inflows. The Fund relies on the planned sale of assets to pay claims. In June, a $4M reserve was established to ensure LCR levels are maintained above the threshold in both stress environments.

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



Level I: January and May's Level I assets were inadequate had an event similar to the 2008 Liquidity Crisis occurred. The LCR fell below the threshold since this scenario assumed no investment inflows. The Fund relies on the planned sale of assets to pay claims. In June, a $4M reserve was established to ensure LCR levels are maintained above the threshold in both stress environments.

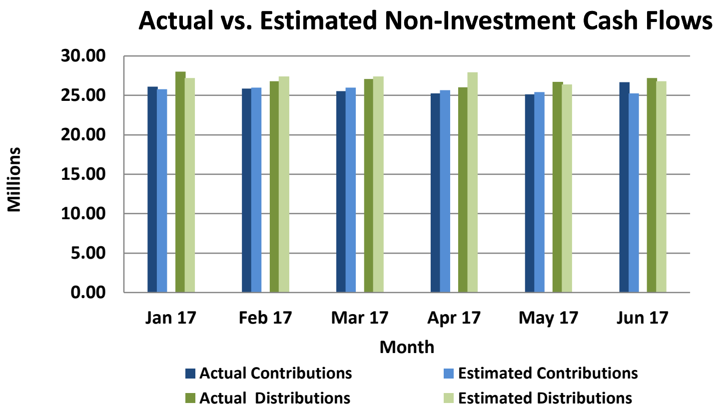
Level I & III: Level I and Level III assets were adequate had a stressed event similar to the 2008 Liquidity Crisis occurred.

Overall LTCF Liquidity Health

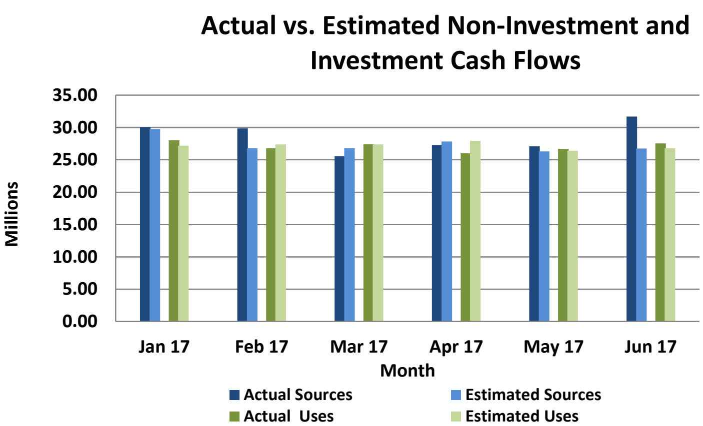
Based Coverage Ratio Analysis:

- ✓ 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's liquidity would not have been adequate had stressed environments occurred.

LTCF Cash Flow Forecasting



January through June's cash flow forecasting accuracy was in the 90th percentile.



January through May's cash flow forecasting accuracy was in the 90th percentile. June's sources variance is due to the establishment of the fund's $4M reserve held at BNY Mellon Bank.