## Section II: Summary of Findings and Comparison with FY 2005 Actuarial Review

This section presents the economic value and capital ratios of the Fund for FY 2006 and provides an explanation of how the results of this year's Review compare with those of the FY 2005 Review.

### A. The FY 2006 Actuarial Review

The FY 2006 Actuarial Review assessed the actuarial soundness of the MMI Fund as of the end of FY 2006 (September 30, 2006) in terms of whether the Fund has maintained at least the two percent capital ratio required by NAHA, and projected the status of the Fund through FY 2013. The objectives of our analysis included:

- evaluating the historical experience of the Fund, including loan termination experience due to claims and prepayments, and losses associated with those terminations;
- estimating future loan termination rates and their corresponding losses and projecting future cash flows of the existing Fund portfolio and future books of business; and
- determining the adequacy of current and future capital resources to meet estimated cash outflow requirements.

We conducted this review by estimating the economic relationships of historical loan performance using historical data provided by FHA, applying the appropriate policy parameters, and using forecasts of future macroeconomic conditions published by Global Insight.

The econometric and cash flow models are similar in most respect to those of the FY 2005 Review with some modifications for this FY 2006 Review. The analysis reflects loan level data on the Fund's experience reported by HUD through February 2006. These models also incorporate a set of economic assumptions and forecasts for future years. To estimate future claim loss rates, the model applies the historical average claim loss severity rates that were realized during FY 2004 and FY 2005 for each of the six FHA mortgage product types and whether downpayment assistance from non-profit organizations were received. (For descriptions of the individual models and assumptions, see Appendices A through D.) Our major findings are as follows:

- as of the end of FY 2006, the MMI Fund was projected to have an estimated economic value of **$22.021 billion** and an unamortized insurance-in-force of **$323.028 billion**;

- the FY 2006 book of business was projected to add an estimated **$33 million** in present value to the economic value of the MMI Fund;

- we estimated that the capital ratio will be **6.82 percent** as of September 30, 2006, and projected that this ratio will be **6.73 percent** as of September 30, 2013. Based on these estimates, we conclude that the Fund would continue to exceed the NAHA-mandated 2.00 percent capital ratio in the foreseeable future.

Our current projections indicate that the Fund's economic value will continue to increase in the future, rising by an average of 7.60 percent per year through FY 2013. Due to the expected slower prepayment rate of the existing books of business implied by the rising interest rate environment and FHA's projection of an increase in the volume of future books of business, the insurance in force (IIF) of the Fund would increase by an average rate of 7.82 percent per year through FY 2013. The economic value is expected to grow at a slightly slower rate than that of the IIF, causing the Fund's projected capital ratio to decrease to 6.73 percent at the end of FY 2013. Exhibit II-1 provides estimates of the Fund's economic value, insurance in force and capital ratio through the end of FY 2013.

**Exhibit II-1**

**Projected MMI Fund Performance for FYs 2006 to 2013 ($ Millions)**

| Fiscal Year | Economic Value of the Fund[a] | Capital Ratio (%) | Volume of New Endorse-ments[b] | Insurance in Force[c] | Economic Value of Each New Book of Business | Investment Earnings on Fund Balances |
|---|---|---|---|---|---|---|
| 2006 | 22,021 | 6.82 | 51,728 | 323,028 | 33 | |
| 2007 | 23,127 | 6.90 | 53,868 | 335,398 | 81 | 1,025 |
| 2008 | 24,610 | 7.03 | 57,115 | 350,143 | 344 | 1,139 |
| 2009 | 26,463 | 7.09 | 62,888 | 373,298 | 604 | 1,249 |
| 2010 | 28,646 | 7.03 | 74,586 | 407,269 | 814 | 1,369 |
| 2011 | 31,113 | 6.93 | 87,049 | 449,002 | 964 | 1,504 |
| 2012 | 33,808 | 6.82 | 97,751 | 495,530 | 1,044 | 1,651 |
| 2013 | 36,763 | 6.73 | 108,668 | 546,129 | 1,146 | 1,809 |

[a] All values are as of the end of each fiscal year. The economic value for future years (FYs 2007 through 2013) is equal to the economic value of the Fund at the end of the previous year, plus the current year's interest earned on the previous fund balance, plus the economic value of the new book of business.
[b] Based on the FHA August 2006 projection.
[c] Estimated based on the MMI Fund data extract as of February 28, 2006.

## B. Change in the Estimated Strength of the Fund

Exhibit II-2 displays the components of the Fund's current economic value and capital ratio, with comparisons between values in the FY 2005 Review and the FY 2006 Review. The FY 2005 Review estimated that the Fund had $21.621 billion in economic value at the end of FY 2005 to cover future claim losses.

**Exhibit II-2**

| Estimates of MMI Fund Economic Value as End of FY 2006 ($ Millions) | | |
|---|---|---|
| **Item** | **End of FY 2005[a]** | **End of FY 2006** |
| Cash | $ 5,471 | |
| Investments | 22,738 | |
| Properties and Mortgages | 1,321 | |
| Other Assets and Receivables | 485 | |
| Total Assets | 30,016 | |
| Liabilities | 6,956 | |
| Total Capital Resources | 23,060 | |
| Net Gain from Investments | | 964[b] |
| Net Insurance Income in FY 2006 | | 50 |
| Special Loss Reserve for Damages by 2005 Hurricanes | | (613) |
| **Total Capital Resources** | | **23,461** |
| PV of Future Cash Flows on Outstanding Business | | (1,440) |
| **Economic Value** | 21,621[c] | **22,021** |
| Unamortized Insurance-In-Force | 358,871[c] | 323,028 |
| **Current Capital Ratio** | 6.02%[c] | **6.82%** |
| Amortized Insurance-In-Force | | 298,542 |
| **Current Capital Ratio with Amortized Insurance-In-Force** | | **7.38%** |

[a] Source: Audited Financial Statements for FY 2005.
[b] Estimated by assuming the total capital resources as of the end of FY 2005 earns a total investment return equal to 1-year Treasury Constant-Maturity Rate, which averaged 4.18 percent during FY 2006. (Source: Board of Governors of the Federal Reserve System).
[c] From the FY 2005 Actuarial Review.

We estimated that the Fund had total capital resources of $23.461 billion at the end of FY 2006 and that the present value of future cash flows was -$1.440 billion. Thus, as of the end of FY 2006, the Fund had $22.021 billion in economic value, which can be used to cover unanticipated future claim losses of the existing portfolio.

As seen in Exhibit II-2, the current economic value of MMI Fund increased by 1.85 percent from that of last year's Review and the current Fund's capital ratio actually increased by 13.29 percent over that of last year's Review. That is, the capital ratio increased from 6.02 percent to 6.82 percent. This increase is due mainly to the high level of prepayment activity during FY 2006 and the lower origination volume of the FY 2006 book of business. That is, the rising capital ratio is due to a shrinking IIF and not due to a rising economic value. Exhibit II-3 compares the two Reviews by annual books of business to highlight how the value of each book has changed during FY 2006. It shows that the present value of future cash flows of all books of business improved from the FY 2005 projection. The improvement is mainly due to the longer-than-expected house price appreciation rate during FY 2005 and the first half of FY 2006. Last year, Global Insight projected that national house price appreciation would slow down to under 4 percent in late 2005. However, OFHEO's recent report showed that the growth rate of the national house price index remained above 10 percent for the one-year period ending June 30, 2006. The high appreciation rate helped reduce the probability of negative equity for all existing books. The current Review shows that the total present value of future cash flows on outstanding books of business is projected to be a negative $0.587 billion. (The present value of the outstanding loans does not include the upfront premium, which is accounted for in another category, the cash value of the Fund itself, which includes the carry-forward value of past upfront premiums.)

**Exhibit II-3**

| Present Value of Future Cash Flows by Book of Business, FY 2005 Review, FY 2006 Review, and Difference ($ Millions) | | | |
|---|---|---|---|
| **Book of Business** | **FY 2005 Review[a]** | **FY 2006 Review[b]** | **Difference[c]** |
| 1977 | 0 | 0 | 0 |
| 1978 | 1 | 0 | -1 |
| 1979 | 2 | 1 | -1 |
| 1980 | 1 | 1 | 0 |
| 1981 | 1 | 0 | 1 |
| 1982 | 0 | 0 | 0 |
| 1983 | 2 | 1 | -1 |
| 1984 | -1 | 0 | 0 |
| 1985 | -2 | -1 | 1 |
| 1986 | -5 | -3 | 2 |
| 1987 | -7 | -4 | 3 |
| 1988 | -5 | -3 | 2 |
| 1989 | -6 | -4 | 2 |
| 1990 | -8 | -5 | 3 |
| 1991 | -9 | -6 | 4 |
| 1992 | -13 | -6 | 7 |
| 1993 | -20 | -10 | 10 |
| 1994 | -26 | -15 | 11 |
| 1995 | -17 | -11 | 7 |
| 1996 | -43 | -27 | 16 |
| 1997 | -55 | -29 | 26 |
| 1998 | -97 | -54 | 44 |
| 1999 | -175 | -107 | 68 |
| 2000 | -198 | -118 | 80 |
| 2001 | -116 | -45 | 72 |
| 2002 | -120 | -26 | 94 |
| 2003 | 221 | 256 | 35 |
| 2004 | -406 | -144 | 262 |
| 2005 | -445 | -230 | 215 |
| **Total** | -1,545 | -587 | 958 |

[a]Values as of the end of FY 2005
[b]Values as of the end of FY 2006
[c]Numbers do not add due to rounding for this and some subsequent Exhibits.

### C. Changes from the FY 2005 Review to the FY 2006 Review

This section describes the sources of change in estimates between the FY 2005 Review and the FY 2006 Review for the FY 2006 economic value and the FY 2012 capital ratio. Separating out the effects of interrelated approaches and assumptions can be done only up to a certain degree of accuracy. The interrelationships among the approaches and assumptions prevent us from identifying and analyzing these as purely independent effects, since these are sometimes jointly determined. However, this section presents a reasonable allocation of all changes from FY 2005 Review estimates, by source of change. The purpose of the decomposition is twofold. First, it describes the change in the economic value from FY 2005 to FY 2006. Second, it explains changes between the current estimate of the capital ratio in FY 2006 and the estimate for FY 2006 that was presented in the FY 2005 Review.

#### 1. Change in Economic Value from FY 2005 to FY 2006

The FY 2005 Review estimated the economic value of the Fund as of the end of FY 2005 to be \$21.621 billion, and the projected FY 2006 and FY 2012 capital ratios to be 6.16 percent and 6.62 percent, respectively. In this Review, we estimated the end-of-FY 2006 economic value for the MMI Fund of \$22.021 billion, which represents an increase of \$400 million from the FY 2005 economic value reported in the FY 2005 Review. This 1.85 percent increase in the estimated economic value of the MMI Fund is accompanied by a significant decrease in the unamortized IIF of 10.0 percent and resulted in the estimated capital ratio to increase by 0.66 percentage points, from 6.16 percent as of the end of FY 2005 to 6.82 percent as of the end of FY 2006.

#### 2. Current Estimate of FY 2006 Economic Value Compared with the Estimate Presented in the FY 2005 Actuarial Review

The FY 2005 Review projected that the FY 2006 book of business and investment earnings on Fund balances would add \$318 million and \$763 million, respectively, to the economic value of the Fund, resulting in a projected FY 2006 economic value of \$22.702 billion. With the updated MMI Fund data extract, we now estimate the value of the FY 2006 book to be only \$33 million but the investment earnings in FY 2006 to be \$964 million. This year’s estimate of the FY 2006 economic value is \$681 million lower than the economic value projected for FY 2006 in last year’s Review, as shown in Exhibit II-4. This amount of change is roughly equal to the one-time special loss reserve deduction for losses associated with the Gulf Coast hurricanes of late 2005, estimated by HUD to be \$613 million.

Exhibit II-4 also provides a summary of the decomposition of changes in the current economic value of the Fund and the capital ratio in FY 2012 from the differences in the FY 2005 and the FY 2006 Reviews. The net change is mainly driven by three factors: the change in the economic forecast from last year, the enhancement of the econometric model to incorporate borrower credit history and the change in the loss severity rates. The longer-than-expected housing boom throughout FY 2005 built an additional equity cushion for the FY 2005 and prior books of business and led to the increase in economic value. The slower-than-projected rise in interest rates caused prepayment rates to be higher in FY 2005 and into FY 2006 than what was estimated last year, leading to a lower amount of IIF. Incorporating borrower credit history into the econometric model has virtually no impact on the economic value. The increase in the overall assumption for loss severity rates translated into a large decrease in economic value. The following pages provide more detailed discussions of individual sources of change.

**Exhibit II-4**

**Summary of Changes in MMI Fund Estimated Economic Value Between FY 2005 and FY 2006 ($ Millions)**

| | Change in FY 2006 Economic Value | FY 2006 Economic Value | Change in FY 2012 Capital Ratio (%) | Corresponding FY 2012 Capital Ratio (%) |
|---|---|---|---|---|
| FY 2005 Economic Value Presented in the FY 2005 Review | | 21,621[a] | | |
| FY 2006 Economic Value Presented in the FY 2005 Review, Excluding the FY 2006 Book of Business: | $763 | 22,384 | | |
| Plus: Forecasted Value of FY 2006 Book of Business Presented in the FY 2005 Review | $318 | | | |
| Equals: FY 2006 Economic Value Presented in the FY 2005 Actuarial Review | | **$22,702** | | **6.62%** |
| Plus: a. Update Actual Origination Volume in the FY 2005 | - $36 | $22,666 | - 0.01% | 6.61% |
| Plus: b. Update Actual Conditional Claim Rates and Conditional Prepayment Rates in the FY 2005 | -$42 | $22,624 | 0.08% | 6.69% |
| Plus: c. Switch to the FY 2006 econometric Model | $191 | $22,815 | -0.19% | 6.50% |
| Plus: d. Update Economic and Demand Forecasts | $546 | $23,361 | 0.32% | 6.82% |
| Plus: e. Deduct Special Loss Reserve for Damages Related to 2005 Hurricanes | - $613 | $22,748 | -0.17% | 6.65% |
| Plus: f. Change in Loss Severity Assumptions | - $727 | $22,021 | -0.54% | 6.11% |
| Plus: g. Expected Impact of IRS Ruling on Downpayment Gift Providers[b] | $0 | $22,021 | 0.71% | 6.82% |
| **Equals: Estimate of FY 2006 Economic Value** | **-$681** | **$22,021** | **0.20%** | **6.82%** |

[a] Economic value as the end of FY 2005.
[b] The IRS ruling will only have an impact on future books of business and therefore has no effect on FY 2006 economic value.

### 3. Decomposition of the Differences in Economic Value and Capital Ratio of the Current Review versus the FY 2005 Review

We first identified the change in the estimated status of the Fund by adjusting for the actual FY 2005 origination volume and for the FY 2005 actual conditional prepayment and conditional claim rates. Then we decomposed the change in the estimated status of the fund that resulted from econometric model enhancements made in the current FY 2006 Review and from the new economic and origination volume forecasts. Finally, the one-time hurricanes-related loss reserves and the impact of the recent IRS ruling on the tax-exempt status of downpayment gift providers are separately identified. Exhibit II-4 summarizes the effects of the individual sources of changes on the Fund's economic value at the end of FY 2006 and capital ratio at the end of FY 2012.

#### a. Updated Origination Volume of FY 2005

The first component of change depicted in Exhibit II-4 is with respect to the updated origination volume for FY 2005. The actual realized origination volume of the FY 2005 book is only 1.3 percent less than the forecasted volume reported in the FY 2005 Review. However, there are more loans receiving downpayment gifts from non-profit organizations, causing the overall credit quality to be less favorable than in last year's forecast. This change caused a small reduction of $36 million to the FY 2006 economic value.

#### b. Updated Actual Mortgage Termination Experiences

The second element of change delineated in Exhibit II-4 is the impact of updated conditional prepayment and claim experiences actually realized during the FY 2005 exposure year. The sustained high prepayment rate experienced during FY 2005 caused a rapid decline in the unpaid balance of the most recent books of business. The smaller size of insurance in force implies lower annual insurance premium income, but also reduces the risk for these books from possible future claims. The realized prepayment and claim experiences in FY 2005 caused a reduction in the economic value for FY 2006 by $42 million. The fast prepayment rates have a prolonged impact through lower future insurance in force, which causes the projected capital ratio for FY 2012 to increase by 0.08 percentage points.

#### c. Change in Econometric Models

To conduct this year's Review, we followed last year's econometric and the discounted cash flow models, with some changes on model specifications. (For descriptions of model specification assumption changes, see Appendices A and B). The loan-level multinomial logit econometric models allow good fits to the age functions of the claim rates during the early years of the mortgage life and effectively capture the nature of the competing risk between prepayments and claims. The future cash flows are simulated and discounted quarterly.

The main enhancement of the econometric model was to incorporate borrower credit history information into the multinomial logit models. At the aggregate level, the new econometric model has little impact on the Fund. However, the results reveal that credit history is among the most influential factors explaining the claim probability among individual FHA-insured mortgages. It can help FHA to fine-tune the individual sources of claim and prepayment rates, and can allow for more sub-portfolio analyses. In particular, analyzing claim risk by borrower credit-score class can be valuable in projecting performance under a risk-based pricing initiative, such as that being proposed in the President's FY 2007 Budget. The new econometric models caused the economic value of FY 2006 to increase by $191 million.

**d. Changes in Economic Environment and Demand Forecast**

The one-year Treasury rate rose sharply from 3.64 percent on July 1, 2005 to 5.16 percent on July 1, 2006. Similarly, the ten-year rate declined from 4.18 percent on July 1, 2005 to 5.19 percent on July 1, 2006. The observed inversed yield curve is very different from the positively sloped curve observed a year ago. A more significant factor is the much higher mortgage interest rate. The average conventional 30-year fixed-rate mortgage commitment rates posted by Freddie Mac increased by 1.06 percentage points from 5.70 percent in July 2005 to 6.76 percent in July of 2006. Prepayment rates may start decreasing from the record high level in the past three years. We expect the share of streamline refinancing loans, which tend to have better credit quality, to decrease in the new books of business.

Consistent with the inverse yield curve, Global Insight, Inc. forecasted the short-term Treasury interest rates to decrease slightly during the next few years. On the other hand, the mortgage interest rates are expected to continue to rise over the next three years. Since most of the recently originated mortgages carry lower contract rates than the projected market rate during the next three years, slower prepayment rates and lower claim rates are expected for fixed-rate products.

The high house price appreciation rate experienced throughout FY 2005 made the existing books of business safer in terms of lower current LTV ratios. The extended duration of the existing MMI Fund portfolio due to the higher interest rates implies that more loans would remain in the portfolio. Meanwhile, the higher origination volume forecasted by FHA for new books of business also leads to faster growth in the overall IIF of the MMI Fund.

According to Global Insight, the four-quarter house price growth rates are 9.1 percent and 6.3 percent ending in the first and the second quarter of FY 2006, respectively. This growth rate is forecasted to decrease from the current level to 1.40 percent by the first quarter of FY 2007 and remain low throughout FY 2007 and into most of FY 2008. Due to this immediate housing market slowdown, the performances of the FYs 2006 and 2007 books of business are expected to be much weaker than the older books. When compared with last year, the slowdown of house price growth rates started almost one full year later than was projected by Global Insight back in 2005. The extended high growth rate made the loans originated prior to FY 2005 more robust compared to what were estimated in the FY 2005 Review. Exhibit II-4 shows that the economic value of FY 2006 increased by $546 million from last year's projection.

Relative to FY 2005 Review, the volumes of future books of business forecasted by FHA are much higher this year. Based on FHA's August 2006 forecast, the origination volume will steadily increase during the next seven years with the growth rates ranging from 4.1 percent to 18.6 percent. The net effect of the stronger current portfolio and the increase in the size of new books of business is an increase in the FY 2012 capital ratio by 0.32 percentage points.

**e. Damages of Hurricane Katrina, Rita, and Wilma**

Hurricane Katrina, the deadliest hurricane in the United States since 1900, landed near Buras, Louisiana in the early morning of August 29, 2005 after crossing the Gulf of Mexico, where it intensified rapidly to a Category 5 hurricane. Katrina brought intensive damage primarily in the states of Alabama, Mississippi, and especially Louisiana, within which FHA loans are concentrated. Shortly after Katrina, Hurricanes Rita and Wilma further damaged the area.

In the FY 2005 Review, we estimated that claim losses attributed to this natural disaster would be about $0.75 billion. According to FHA's estimate in August 2006, losses directly caused by the hurricanes are about $613 million. These losses are expected to be realized during FYs 2007 and 2008. When the anticipated loss reserve of $613 million is subtracted, the FY 2006 economic value becomes $22.748 billion and the capital ratio of FY 2012 would be reduced by 0.17 percentage points to 6.65 percent.

**f. Change Due to Loss Severity Assumption for Six FHA Mortgage Products**

In the FY 2005 Review, we applied the average loss rates of loans claimed between FY 2000 and FY 2004 by product types. However, the observed loss rates during FY 2005 increased from the previous years. With the low house price appreciation rates projected by Global Insight for the next several years, we believe the loss severity rates will remain high for the foreseeable future. As a result, the loss severity rates used in the FY 2006 Review are based on the average of the FY 2004 and FY 2005 experience. Additional data also reveal that the loans receiving downpayment gifts from non-profit organizations also experienced higher loss severity rates than other comparable loans. As a result, the loss severity rates assumed in this year's Review are differentiated by both product types and the source of downpayment assistance.

These new loss severity assumptions are, for loans receiving downpayment gifts from non-profit organizations: 42.03 percent for 30-year fixed-rate mortgages, 41.63 percent for 15-year fixed-rate mortgages, and 38.93 percent for adjustable-rate mortgages. For all other loans, the assumed severity rates are: 39.72 percent for 30-year non-streamline refinance fixed-rate mortgages, 47.26 percent for 15-year non-streamline refinance fixed-rate mortgages, 35.59 percent for non-streamline refinance adjustable-rate mortgages, 33.46 percent for 30-year streamline refinance fixed-rate mortgages, 46.04 percent for 15-year streamline refinance mortgages, and 32.53 percent for streamline refinance adjustable-rate mortgages.

These higher loss rates have a negative impact on FY 2006 economic value of $727 million. The corresponding capital ratio for FY 2012 was reduced by 0.54 percentage points.

**g. Change Due to IRS Ruling to Eliminate Downpayment Gift Loans from Non-profit Organizations**

Accounting for the high concentration of the recent books of business in loans receiving downpayment assistance from non-profit organizations caused the single most significant decrease in economic value in the FY 2005 Review. In May 2006, the IRS published a ruling disallowing tax-exempt non-profit organizations to receive contributions from home sellers and pass them along to homebuyers as downpayment gifts. As of August 2006, there were about 170 non-profit organizations under investigation by the IRS for possible removal of their tax-exempt non-profit status. About 40 of them were found to be free from such practices and are no longer being investigated. The IRS expects that all institutions involved in this activity will lose their tax exempt status within the next two years. Without the tax-exempt status, these organizations will no longer be eligible as a source of downpayment gift funds for FHA-insured loans.

In this FY 2006 Review, we assume the complete elimination of these non-profit gift loans will happen over the next three years. The decreasing share of these high-risk loans from future books of business has no impact on the FY 2006 economic value, but it does increase the capital ratio in FY 2012 by 0.71 percentage points. More importantly, this ruling will significantly improve the quality of new books of business.