



## Mortgage Market Note

## The Housing Goals of Fannie Mae and Freddie Mac

February 1, 2010

### MORTGAGE MARKET NOTE 10-2

## The Housing Goals of Fannie Mae and Freddie Mac in the Context of the Mortgage Market: 1996 – 2009

### I. Introduction

One of the purposes of the Federal Housing Enterprises Financial Safety and Soundness Act of 1992 (the Safety and Soundness Act) was to address concerns about the affordable housing activities of Fannie Mae and Freddie Mac (the Enterprises). The Enterprises had historically lagged other sectors of the mortgage market when it came to affordable housing. In the Safety and Soundness Act, Congress directed the U.S. Department of Housing and Urban Development (HUD) to develop regulations that would set housing goals for the Enterprises to ensure they served the affordable housing segments of the market as defined by the statute.

This Note reviews the history of the housing goals. It reports on the market projections HUD used in setting the goals from time to time, as well as each Enterprise's actual performance in relation to the goals, HUD's projections, and the share of mortgages originated in each year that would have been eligible to count toward each goal.

#### *Legislative Background*

In 1991 hearings before the Senate Banking, Housing, and Urban Affairs Committee held prior to the enactment of the Safety and Soundness Act, Fannie Mae testified that only about 36 percent of its single-family housing deliveries were for affordable housing. In addition, housing advocates urged that the Enterprises do more to aid the affordable housing market.

Given the public benefits conferred on the Enterprises, the affordable housing needs of the nation, and the dominant influence the Enterprises have on mortgage markets, Congress established housing goals as part of an effort to re-orient the Enterprises toward viewing very low-, low- and moderate income housing and housing in central cities and rural areas as key components of each Enterprise's credit guarantee business. According to the Senate Banking Housing and Urban Affairs Committee Report on S. 2733, the Federal Housing Enterprises Regulatory Reform Act of 1992: "The purpose of these goals is to facilitate the development in both Fannie Mae and Freddie Mac of an ongoing business effort that will be fully integrated in their products, cultures and day-to-day operations to service the mortgage finance needs of low- and moderate-income persons, racial minorities and inner-city residents." The Enterprises,



the report noted, “can play an important role in ensuring that mortgage credit is increasingly available to those individuals and for those purposes which for too long have been ignored by the secondary market.”<sup>1</sup>

In analyzing the Enterprises’ 1995 affordable housing performance, HUD observed that the Enterprises were not doing as well as portfolio lenders in funding disadvantaged borrowers and neighborhoods. Freddie Mac’s affordable housing performance, in particular, stood out as lagging other sectors of the market.<sup>2</sup>

The Safety and Soundness Act mandated that HUD establish three housing goals for the Enterprises:

**Low- and Moderate-Income Goal** – Targeted borrowers or renters earning no more than the area median income where they reside.

**Underserved Areas Goal** – Targeted borrowers or renters residing in lower income areas (90 percent of area median income in metropolitan areas and 95 percent of area median income in nonmetropolitan areas), or higher minority areas (tract minority percentage at or above 30 percent where the tract median income is no more than 120 percent of area median income).

**Special Affordable Goal** – Targeted borrowers or renters earning no more than 60 percent of area median income or residing in low-income census tracts and earning no more than 80 percent of area median income.

In the Committee report accompanying the Safety and Soundness Act, the Committee on Banking, Finance, and Urban Affairs of the House of Representatives stated that “[t]hese goals will also facilitate the development in both [E]nterprises of an ongoing business effort that will be fully integrated in their products and cultures to service the mortgage finance needs of a growing nonprofit, public, and for-profit sector that is developing and preserving affordable housing for very low- and low-income persons.”<sup>3</sup> The Committee also noted that the intent of the Safety and Soundness Act was that the Enterprises undertake special efforts to accommodate these disadvantaged groups, including borrowers with incomes lower than those specified in the goals, and seek out prudent business opportunities to do so.<sup>4</sup>

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<sup>1</sup> “Federal Housing Enterprises Regulatory Reform Act of 1992.” Report of the Committee on Banking, Housing, and Urban Affairs, United States Senate to accompany S. 2733. Report 102-282. May 15, 1992 pp. 34-5.

<sup>2</sup> Bunce, Harold L. and Randall M. Scheessele, 1996, *The GSEs’ Funding of Affordable Loans*, Working Paper No. HF-001. Washington, D.C., Office of Policy Development and Research, U.S. Department of Housing and Urban Development.

<sup>3</sup> “Government-Sponsored Housing Enterprises Financial Safety and Soundness Act of 1991,” Report of the Committee on Banking, Finance, and Urban Affairs, House of Representatives, to accompany H.R. 2900, Report 102-206, (September 17, 1991), p. 57.

<sup>4</sup> House of Representatives Report, p. 59.



## *History of HUD Housing Goal Regulations*

The housing goal regulations implementing the 1992 legislation were in effect from 1993 through 2009, with HUD overseeing compliance with the housing goals through 2007. The housing goal oversight function was transferred to the Federal Housing Finance Agency (FHFA) on July 30, 2008, with the enactment of the Housing and Economic Recovery Act of 2008 (HERA). Under the regulations, the Enterprises received goals credit for purchasing or guaranteeing Enterprise-eligible mortgages that met one or more of the goals criteria.

The Safety and Soundness Act set out targets for the goals for the initial or transitional years (1993-1995) and HUD, and later FHFA, established the goals for subsequent years. HUD's approach to setting the housing goals was to project the market performance for each goal assuming a "normal" home purchase environment (a refinance rate of 35 percent or less). HUD projected the market out three or four years in each regulation and set the goals for that period. In 1995, HUD published the housing goals for years 1996 to 1999 (which were subsequently extended to the year 2000). In 2000, HUD revised the housing goals to cover the years 2001 to 2003 (extended to 2004). HUD's final revision of the housing goals came in the 2004 regulation; those housing goals covered the years 2005 to 2008. HERA extended the previous housing goal structure through 2009, with FHFA adjusting the housing goal targets to align them with FHFA's estimates of market activity in the current mortgage market environment.

To establish the housing goals, HUD (and subsequently FHFA) staff estimated the share of goal qualifying mortgages (or goal qualifying units associated with mortgages) in the conventional conforming market that would be originated and available for acquisition by the Enterprises. The market estimates for the 1993 to 2009 period were based on a components model that calculated goal qualifying shares for various property types (e.g., owner-occupied one unit) and combined them using a weighted average.<sup>5</sup> With the exception of 2009, the market projections and housing goals were set under the assumption of a "normal" home purchase environment. For 2009, FHFA staff assumed a refinance rate of 65 percent when estimating market performance.

Beginning with 2010, HERA makes significant changes to the goals framework. Most notably, HERA redefined the goal targets to reach lower income groups and outlined separate goals for multifamily and owner-occupied mortgages and, within the owner-occupied category, established separate goals for purchase and refinance loans. There will be three single-family owner-occupied home purchase mortgage goals, one single-family owner-occupied property refinance mortgage goal, and one multifamily goal and one multifamily subgoal for 2010. The multifamily goal, the refinance mortgage goal, and one of the home purchase goals will target low-income borrowers/renters (income/rent equivalent not greater than 80 percent of the area median income). One of

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<sup>5</sup> See pages 16-19 (Appendix A) for a description of the market estimation methodology used for the 1993 to 2009 period. Also see Bunce, Harold L., 2007, *The GSEs' Funding of Affordable Loans: A 2004-2005 Update*, Working Paper No. HF-018. Washington, D.C., Office of Policy Development and Research, U.S. Department of Housing and Urban Development.



the other home purchase goals will target very low-income borrowers (income not greater than 50 percent of the area median income).<sup>6</sup> The third home purchase goal will target borrowers who reside in low-income areas (tract income not greater than 80 percent of the area median income) and below median-income borrowers in high-minority, moderate-income tracts (borrower's income is no greater than the area median income, tract population is at least 30 percent minority and tract median income is less than the area median income). In addition to the new housing goals, FHFA will also be implementing "duty to serve" and other reporting requirements for the Enterprises' affordable housing programs.

To provide a context for the upcoming changes, this note describes the housing goals and performance under the goals for the years 1996 to 2008. We analyze the relevance of the market estimates to the housing goals and to the actual market. Then we compare Fannie Mae's and Freddie Mac's goals performance to the goals and the market. In sections II, III, and IV, we analyze the low- and moderate-income, special affordable and underserved areas housing goals, respectively. We summarize in section V the three home purchase subgoals, which began in 2005. We offer conclusions in section VI.

## II. Low- and Moderate-Income Goal

The Low- and Moderate-Income Goal was established to promote affordable housing for families whose incomes are equal to or less than the area median income ("low-mod" incomes). For the years 1996 to 1999, HUD estimated that between 48 percent and 52 percent of dwelling units associated with mortgage originations, both single-family and multifamily, would be available to low-mod income families. By analyzing the Enterprises' mortgage acquisitions from the previous three years, HUD determined that the percentage of units associated with these mortgages occupied by low-mod families were well below the market. HUD set the goal target at 40 percent for 1996 and 42 percent for the years 1997 to 2000 (see Figure 1).

For the years 2001 to 2004, HUD raised its estimate of the share of the market available to low- and moderate-income families to a range of 50 percent to 55 percent. HUD also concluded that after five years under this housing goal structure, the Enterprises should at a minimum be able to meet the low end of the market range. HUD established the low- and moderate-income goal at 50 percent for those four years.

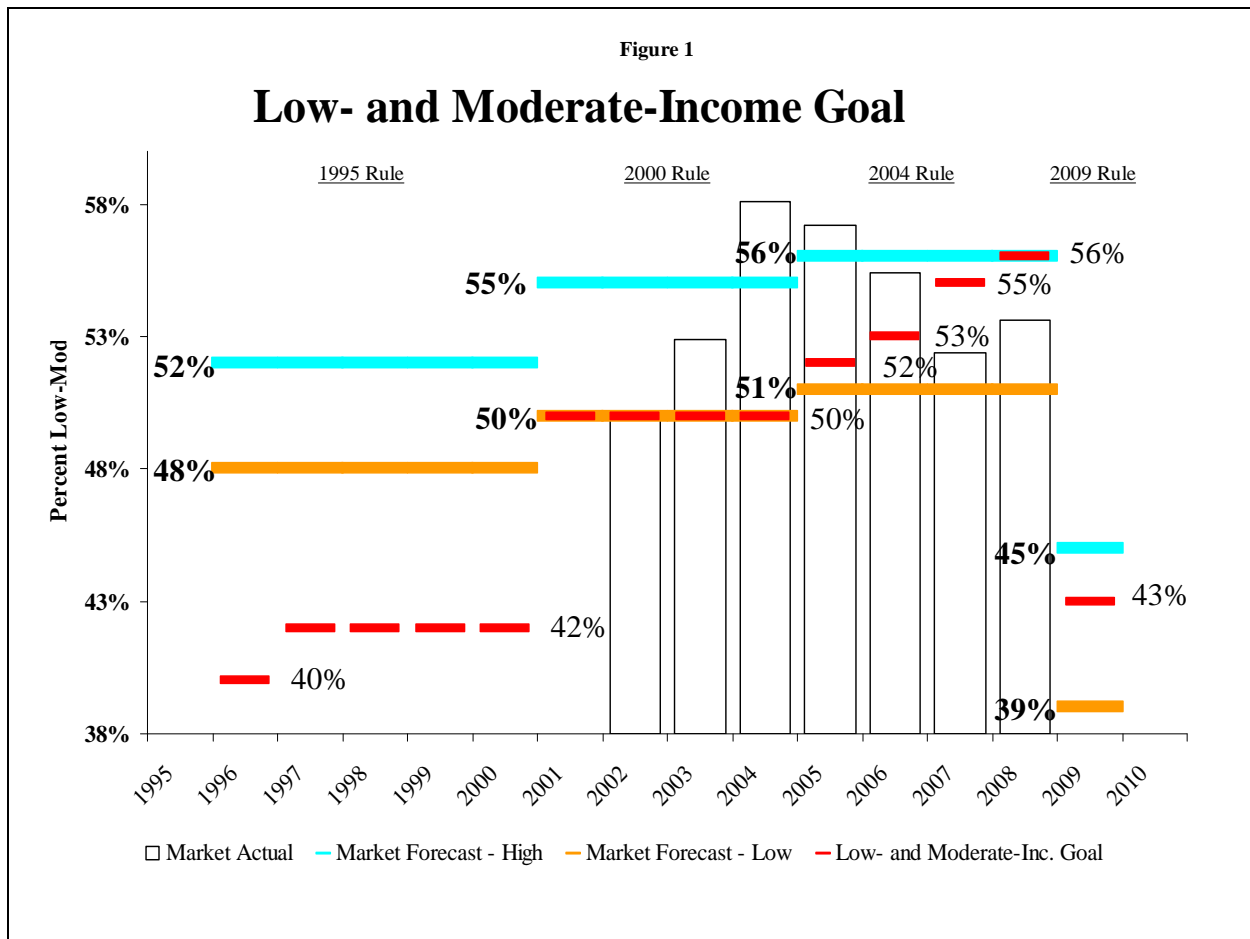
For the next regulatory cycle, 2005 to 2008, HUD raised its estimate of the low-mod market slightly to a range of 51 percent to 56 percent of all units from mortgages originated during the calendar year. In a departure from previous regulatory cycles, where a single goal level was set over the entire period, HUD set the low- and moderate-income goal to increase every year between 2005 and 2008 (see Figure 1).

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<sup>6</sup> Note that the definition of low-income has changed to 50 percent of area median income under the HERA defined housing goals from 60 percent that was the definition under the 1993 to 2009 housing goals.



With an emphasis on requiring the Enterprises to lead the market, HUD increased the low- and moderate-income goal from 52 percent in 2005 to 56 percent in 2008.



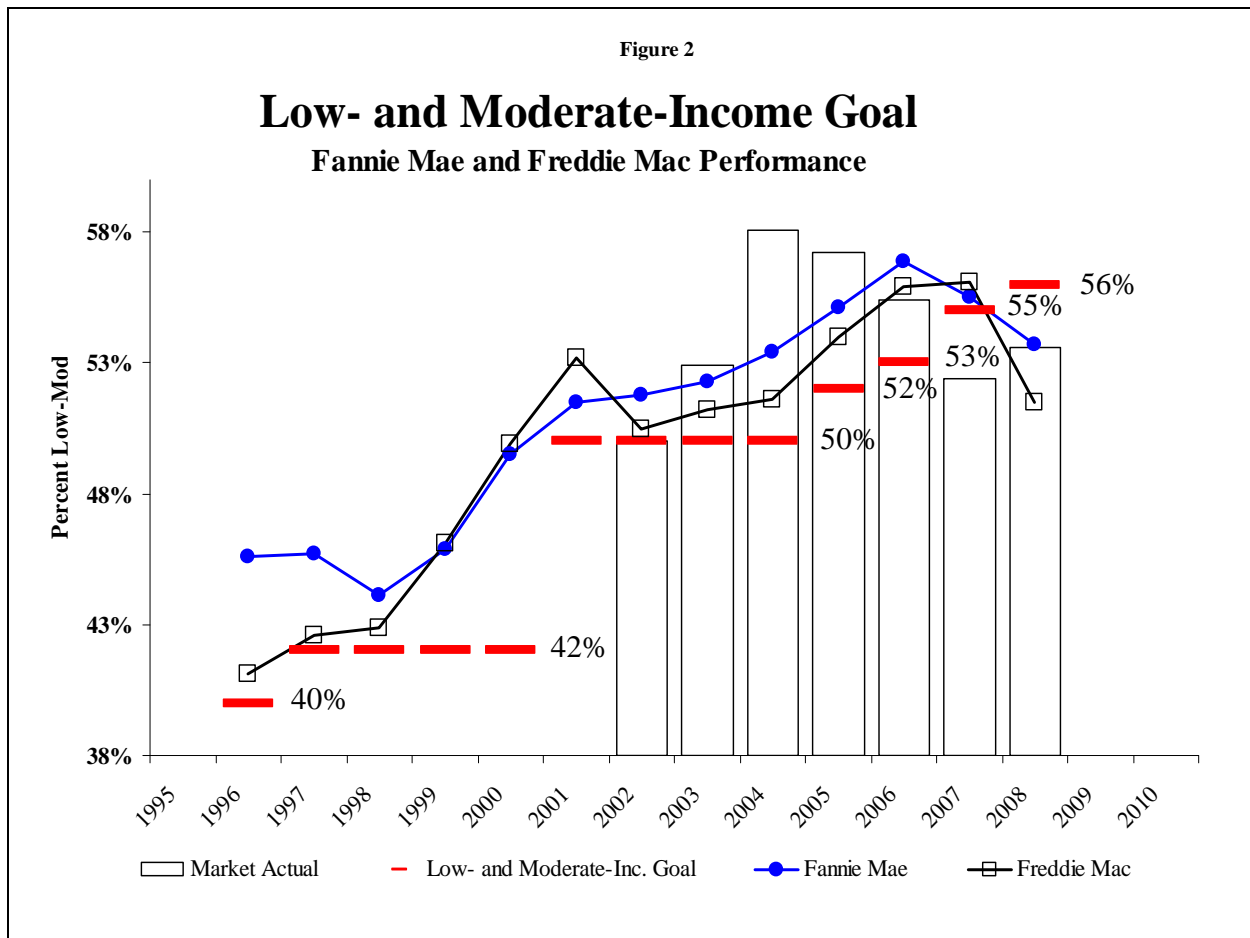
Source: *Home Mortgage Disclosure Act* data. Figure 1 shows HUD’s and FHFA’s estimates of future market activity made when setting the low- and moderate-income goals for 1996 through 2009 (the orange and aqua lines), the low-mod goals HUD and FHFA established in these years (the red lines), and estimates of actual market activity (the blank bars). Due to a lack of data on the multifamily mortgage market, estimates of actual market activity are not available prior to 2002.

The low- and moderate-income share of the market increased through 2004 and then decreased during 2005 through 2007, reflecting the mortgage market bubble and subsequent crash. This measure of the market low- and moderate-income share excludes B- and C-grade mortgages.<sup>7</sup> While among the purposes of the housing goals was to encourage the Enterprises to penetrate segments of the mortgage market that are important sources of affordable lending, the B- and C-grade mortgage market

<sup>7</sup> See pages 19-20 (Appendix A) for an explanation of the methodology used to approximate B- and C-grade mortgages in the Home Mortgage Disclosure Act data.

segment was determined to be too risky and was excluded from market estimates.<sup>8</sup> Mortgages in the Home Mortgage Disclosure Act (HMDA) data where borrower income is missing are excluded from the market estimates. Alt-A mortgages are included in the market figures to the extent that borrower income data are available.

FHFA projected the low- and moderate-income shares of the market would be between 39 percent and 45 percent in 2009, reflecting tighter underwriting criteria by the Enterprises and private mortgage insurers (see Figure 1). Under these market conditions, FHFA determined that a low- and moderate-income goal of 43 percent would be reasonable, yet still challenging for the Enterprises to meet.<sup>9</sup>



Source: Home Mortgage Disclosure Act and Enterprise data. Figure 2 shows the Enterprises' actual low- and moderate-income goal performance from 1996 to 2008.

Fannie Mae and Freddie Mac exceeded the low- and moderate-income goal in every year except 2008 (See Figure 2). Both Enterprises met or exceeded the market's

<sup>8</sup> HUD's Regulation of the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac); Final Rule. *Federal Register*, (Vol. 65, No. 211) October 31, 2000, p. 65061.

<sup>9</sup> 2009 Enterprise Transition Affordable Housing Goals. *Federal Register*, (Vol. 74, No. 152), August 10, 2009, p. 39876.



performance during 2002, 2006, and 2007. In addition, Fannie Mae exceeded the market in 2008 while Freddie Mac fell short.<sup>10</sup> For data corresponding to Figures 1 and 2, see Table B.1 in Appendix B.

### III. Special Affordable Goal

The Special Affordable Goal was established to promote affordable housing for families with incomes at or below 60 percent of the area median income and to families at or below 80 percent of area median income who live in low-income census tracts (tract income at or below 80 percent of area median income). These criteria defined “special affordable” units for HUD. In 1995, HUD projected that 20 percent to 23 percent of units associated with mortgages originated from 1996 to 1999 should be special affordable. HUD subsequently extended the estimates to 2000. As had been the case for the low- and moderate-income goal during the 1996 to 1999 period, the Enterprises’ expected performance on the special affordable goal was significantly below the projected 1996 to 1999 market rate, so HUD set the special affordable goal at 12 percent for 1996 and then 14 percent for 1997 to 2000 (see Figure 3).

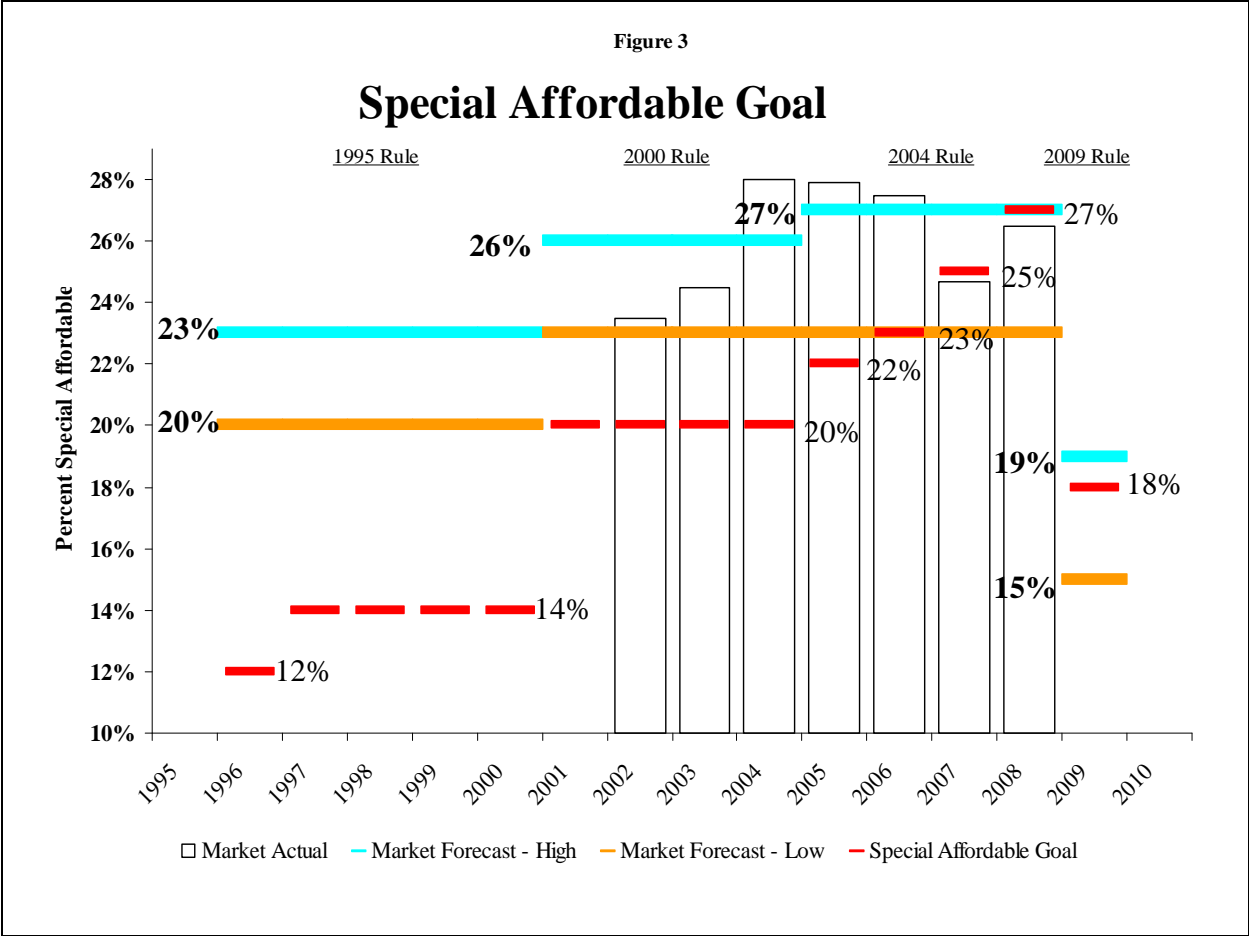
HUD increased its estimate of the special affordable share of the market to 23 percent to 26 percent for the period 2001 to 2004. Fannie Mae’s and Freddie Mac’s performance had improved, but still fell short of the estimated market range. Therefore, HUD determined that a goal within the market range was still not feasible and set the special affordable goal for the period from 2001 to 2004 at 20 percent of units financed. This was still 3 percent below the low end of the market estimate, but it represented a 43 percent increase over the 1996 to 2000 goal level. HUD placed an emphasis on multifamily affordable housing in the 2000 regulation, which affected the level of the special affordable goal more than the other two goals because multifamily rental units contribute more heavily toward the special affordable goal.

The market projections for the 2005 to 2008 period remained the same, except the high end of the forecast rose to 27 percent. As with the low- and moderate-income goal, the special affordable goal was set to incrementally increase during this period, from 22 percent in 2005 to 27 percent—the high end of the market forecast—in 2008. The increase in the special affordable goal was the most aggressive of the changes to the three housing goals—HUD raised the 2008 goal by more than a third over its 2004 level.

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<sup>10</sup> For a broader analysis of the Enterprises’ goals performances on all three housing goals for some of these years, see Manchester, Paul B., 2007, *Goal Performance and Characteristics of Mortgages Purchased by Fannie Mae and Freddie Mac, 2001-2005*. Working Paper No. HF-017. Washington, D.C., Office of Policy Development and Research, U.S. Department of Housing and Urban Development.





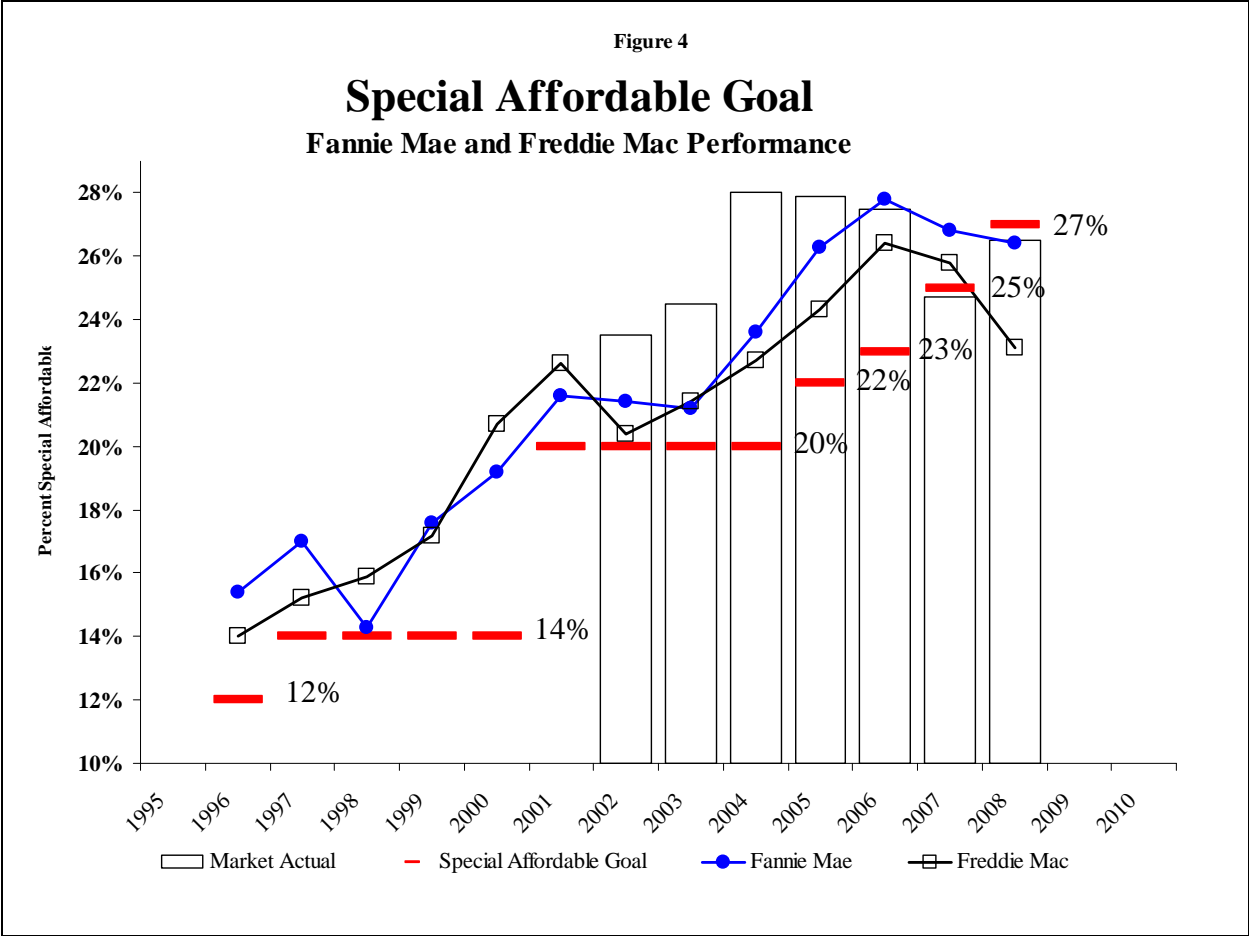
Source: *Home Mortgage Disclosure data*. Figure 3 shows HUD's and FHFA's estimates of future market activity made when setting the special affordable goals for 1996 through 2009 (the orange and aqua lines), the special affordable goals HUD and FHFA established in these years (the red lines), and estimates of actual market activity (the blank bars).

FHFA projected the special affordable share of the market for 2009 to be between 15 percent and 19 percent, again reflecting tighter underwriting criteria by the Enterprises and private mortgage insurers. FHFA determined that a goal of 18 percent special affordable units would be reasonable to expect the Enterprises to meet.

Fannie Mae and Freddie Mac exceeded the special affordable goal set by HUD in every year except 2008 (see Figure 4). However, their goal performance was below the actual market from 2002 to 2005. In 2007, both Enterprises' goal performance exceeded the actual market as well as the special affordable goal. In 2006 and 2008, only Fannie Mae's goal performance was at least as high as the actual market. For data corresponding to Figures 3 and 4, see Table B.2 in Appendix B.







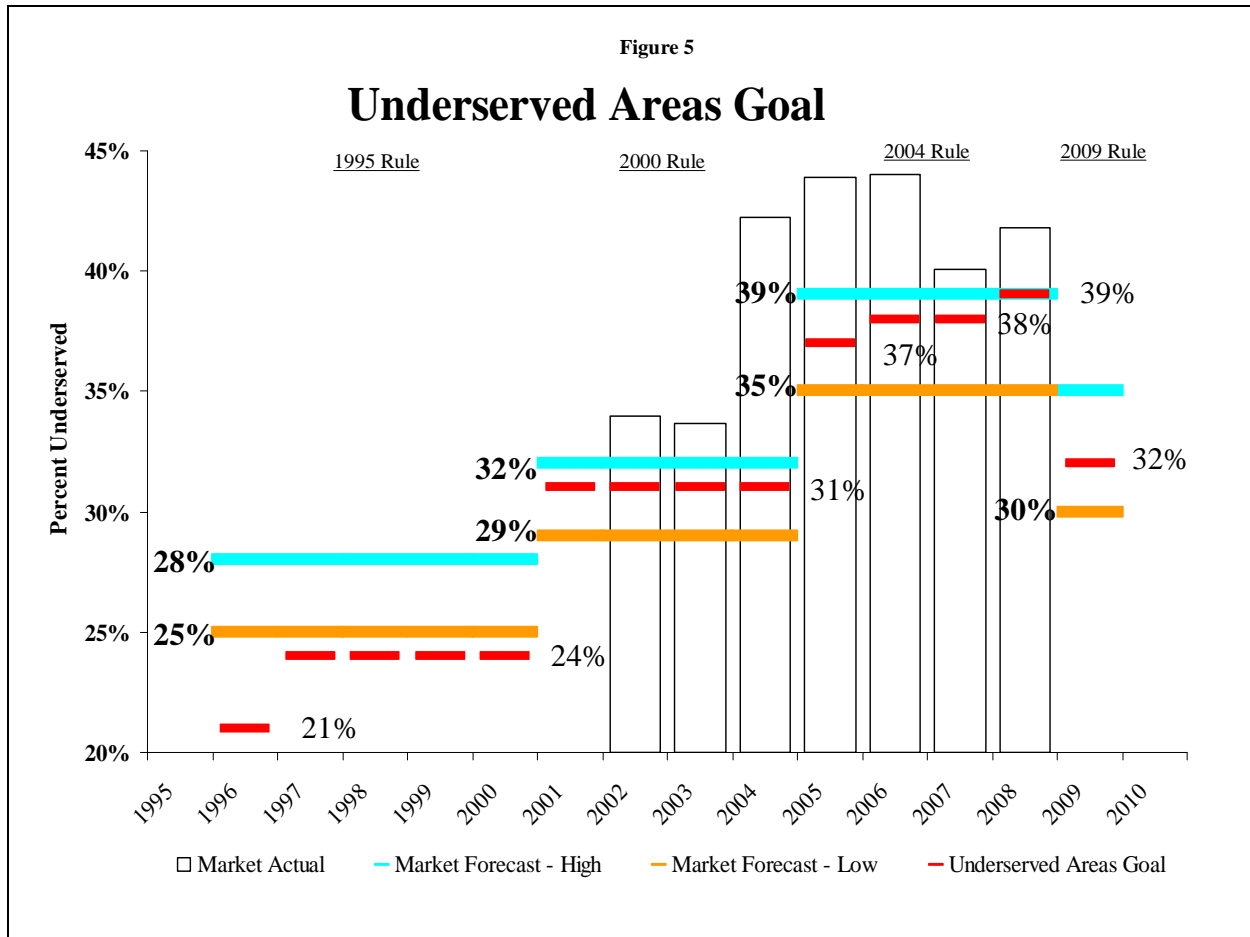
Source: Home Mortgage Disclosure Act and Enterprise data. Figure 4 shows the Enterprises' actual special affordable goal performance from 1996 to 2008.

#### IV. The Underserved Areas Goal

The Underserved Areas Goal was established to promote mortgage lending in areas that were determined not served adequately. Research at HUD and elsewhere determined that low-income and high-minority areas had low mortgage origination rates and high mortgage denial rates, thus such areas served as the basis for HUD's definition of underserved areas. An underserved area is defined for the purposes of the housing goals as a lower income area (at or below 90 percent of area median income in metropolitan areas or at or below 95 percent of area median income in nonmetropolitan counties) or a high minority census tract (30 percent or more minority population in a census tract with a median income no more than 120 percent of area median income). In 1995, HUD projected that 25 percent to 28 percent of units associated with mortgages originated from 1996 to 2000 would be located in underserved areas. During the first rulemaking period, each Enterprise's anticipated performance on the underserved areas goal was below the projected market rate. In response, HUD set the underserved areas goal at 21 percent for 1996 and just below the low end of the market range at 24 percent for the period from 1997 to 2000. Figure 5 displays the market



forecasts, the underserved areas housing goal levels, and estimates of actual market activity over the period 1996 to 2009.



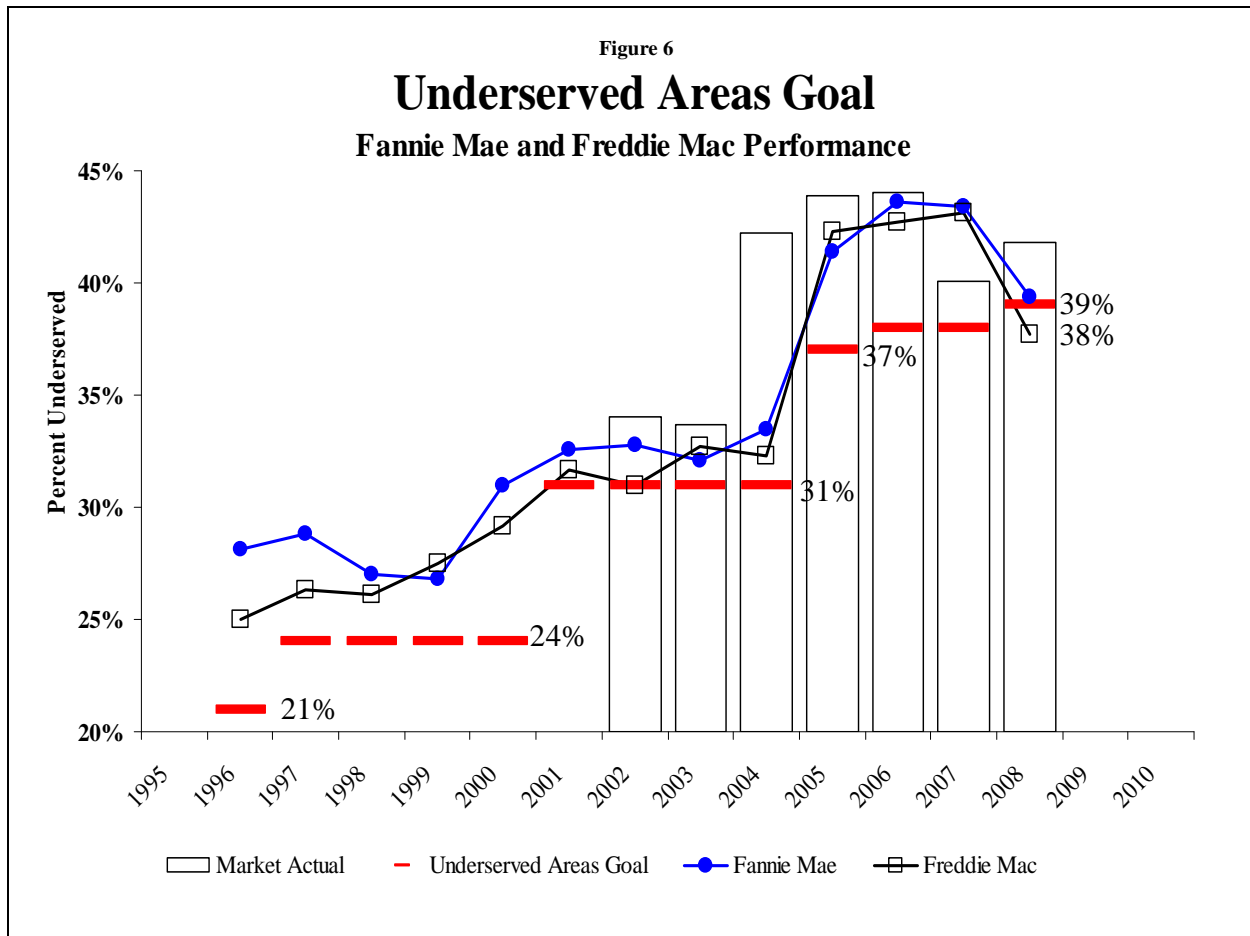
Source: *Home Mortgage Disclosure Act* data. Figure 5 shows HUD's and FHFA's estimates of future market activity made when setting the underserved areas goals for 1996 through 2009 (the orange and aqua lines), the underserved areas goals HUD and FHFA established in these years (the red lines), and estimates of actual market activity (the blank bars).

HUD increased its market forecast of the underserved market to a range of 29 percent to 32 percent for 2001 through 2004. After analyzing the Enterprises' goal performance over the preceding five years, HUD set the underserved areas goal at 31 percent, near the high end of the market estimate because historically, the underserved areas goal had been statistically the least challenging of the three housing goals. One explanation for this is that mortgages (dwelling units) that qualify for the low-mod and special affordable goals often also qualify towards the underserved areas goal. The other two housing goals had been set at the bottom of or below the range of market estimates.

In 2004, HUD significantly increased its forecast of the underserved market for the 2005 to 2008 period. HUD had transitioned to 2000 U.S. Census Bureau demographic data as the basis for defining underserved areas, and changes in demographic composition since the 1990 Census included a large increase in high minority (30 percent or more

minority population) census tracts. HUD incrementally increased the underserved areas goal from 37 percent in 2005 to 38 percent in 2006 and 2007 and 39 percent in 2008.

For 2009, FHFA projected the underserved areas share of the market to be between 30 percent and 35 percent, again reflecting tighter underwriting criteria. In current market conditions, FHFA determined it would be reasonable to expect the Enterprises to meet a goal of at least 32 percent of units from underserved areas.



Source: Home Mortgage Disclosure Act and Enterprise data. Figure 6 shows the Enterprises' actual underserved areas goal performance from 1996 to 2008.

Figure 6 shows Fannie Mae's and Freddie Mac's actual underserved areas housing goal and general market performance. The increase in actual market performance in 2004 reflects HUD's transition to using 2000 Census demographics. The highest cost loans, a proxy for B- and C-grade mortgages, were removed from the data. The 2004, 2005, and 2006 actual market performance includes the effects of looser underwriting standards and an increase in Alt-A loan originations. As the Alt-A market collapsed and underwriting standards tightened in 2008, the Enterprises' underserved areas goal performance suffered and, for the first time, one of the Enterprises, Freddie Mac, failed to meet the goal. For data corresponding to Figures 5 and 6, see Table B.3 in Appendix B.

## V. Home Purchase Subgoals

The Enterprises' goal performance in the home purchase (i.e., purchase money mortgage) market has historically been consistently below market levels. So in its 2004 regulation, HUD established subgoals for the acquisition of owner-occupied property home purchase mortgages in metropolitan areas for the first time to focus the Enterprises' efforts on this market. In that regulation, HUD set subgoals for home purchase mortgages on properties in metropolitan areas under each of the three housing goals for the years 2005 to 2008. Each subgoal was scheduled to increase over that period: from 45 percent to 47 percent for the low- and moderate-income subgoal, 17 percent to 18 percent for the special affordable subgoal, and 32 percent to 34 percent for the underserved areas subgoal. As with the overall goals, FHFA determined the subgoals for 2009 should be scaled back. In its August 10, 2009, regulation, FHFA set the low- and moderate-income home purchase subgoal at 40 percent, the special affordable subgoal at 14 percent, and the underserved areas subgoal at 30 percent for 2009.<sup>11</sup>

Over the period 2005 to 2008, the market performed lower than expected with respect to the low- and moderate-income and special affordable subgoals (see Figures 7 and 8). Market performance exceeded the underserved areas subgoal in all years except 2008 as the housing bubble inflated and later burst (see Figure 9). While Fannie Mae and Freddie Mac employed different strategies, both took advantage of lower underwriting standards that were prevalent from 2004 to 2006 to meet the subgoals. As the mortgage market collapsed in 2008, performance of both the Enterprises' and the market decreased substantially below the set subgoal (see Figures 7 through 9). For data corresponding to Figures 7 through 9, see Tables B.1, B.2 and B.3 in Appendix B.

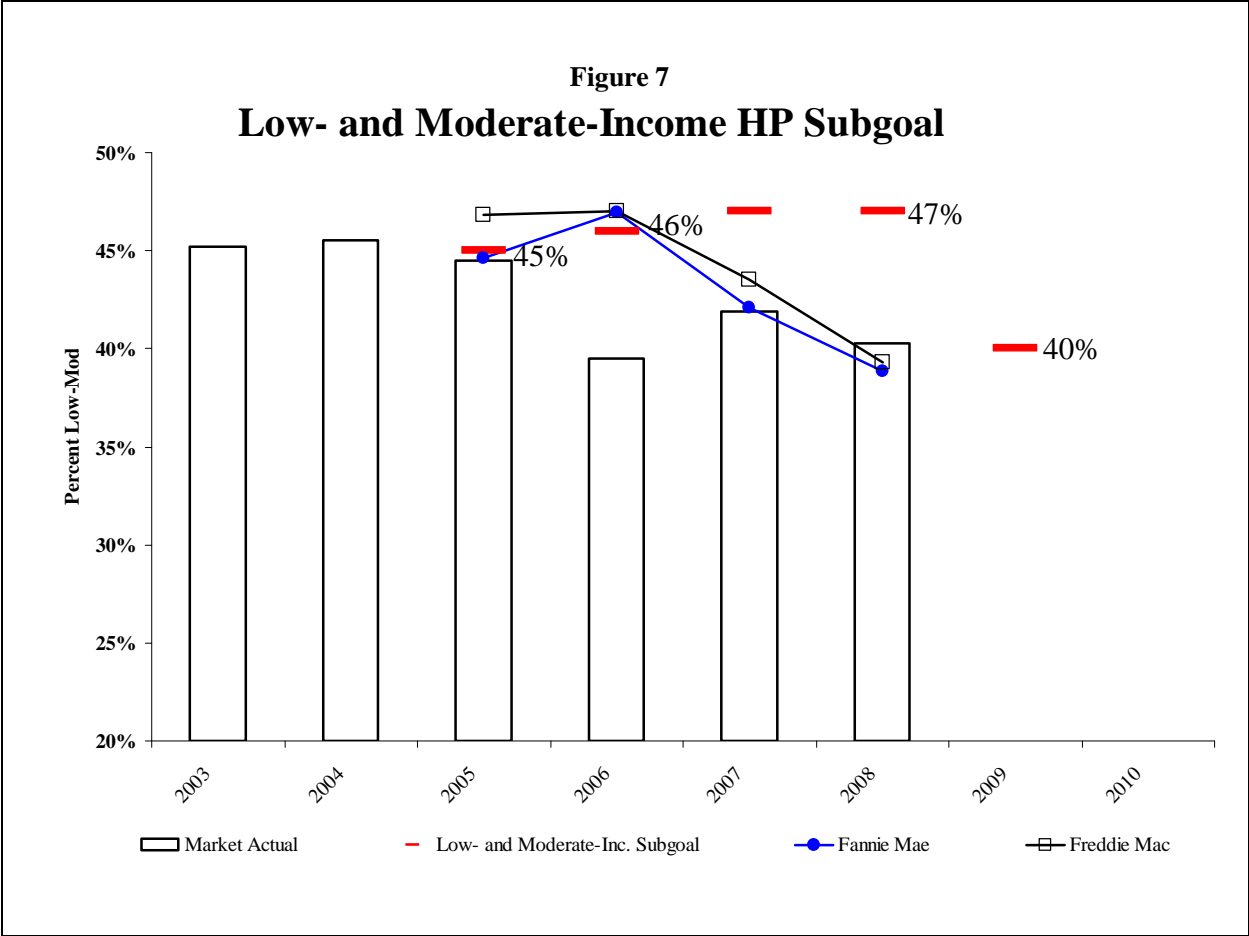
## VI. Conclusion

The purpose of this note has been to look at the affordable housing goals in the context of the mortgage market (both anticipated and actual), the Enterprises' performance, and the regulatory process. In each regulatory cycle the numerical goals were set up to four years in advance. The goals were set as specific minimum goal-qualifying percentages of all dwelling units financed by each Enterprise in a given year. The forecasts HUD developed were based on the assumption of a "normal" home purchase market environment in which purchase mortgages outnumbered refinance mortgages. When the market experienced higher than average refinance activity, the actual goals qualifying shares of mortgage originations were significantly different from the forecasts.

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<sup>11</sup> Federal Housing Finance Agency. "2009 Enterprise Transition Affordable Housing Goals," *Federal Register*, Vol. 74, No. 152, August 10, 2009, pp. 39873 to 39900.

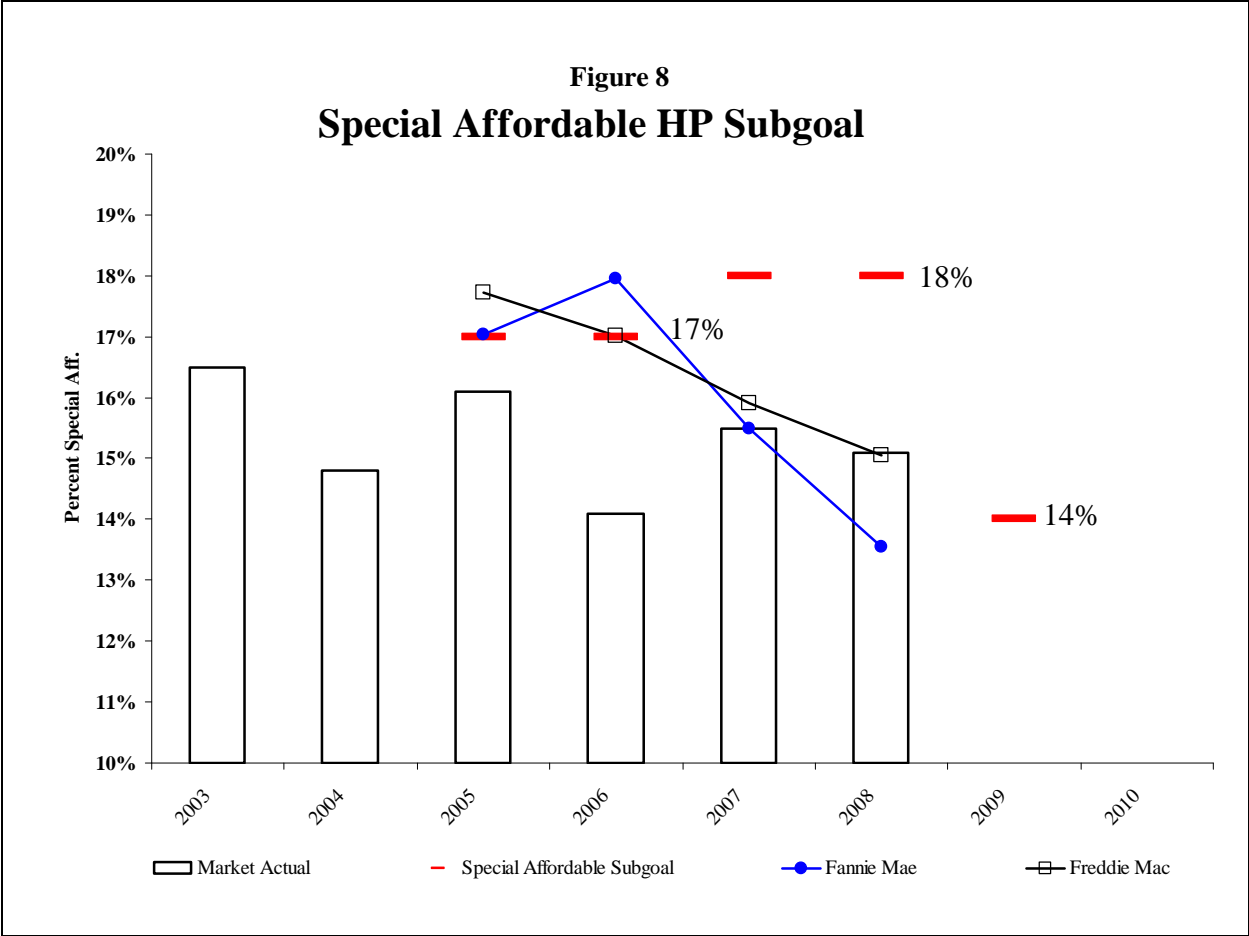




Source: *Home Mortgage Disclosure Act and Enterprise data*. Figure 7 shows the low- and moderate-income subgoals HUD and FHFA established between 2005 and 2009 (the red lines), and estimates of actual market activity (the blank bars) and the Enterprises' actual low- and moderate-income subgoal performance from 2004 to 2008.

Setting the goals for a period of three or four years had the advantage of providing certainty to the Enterprises in planning to meet the affordable housing goal requirements. However, sharp swings in the mortgage marketplace in recent years meant that actual market performance deviated substantially from the market projections. Once put into place, the housing goals are quite rigid, though goals can and have been declared infeasible in the past. When the market deviated from a “normal” home purchase environment, particularly when the shares of goal qualifying mortgages originated in the conventional conforming market were significantly below the projected qualifying shares, achieving one or more goals became much less feasible for the Enterprises.





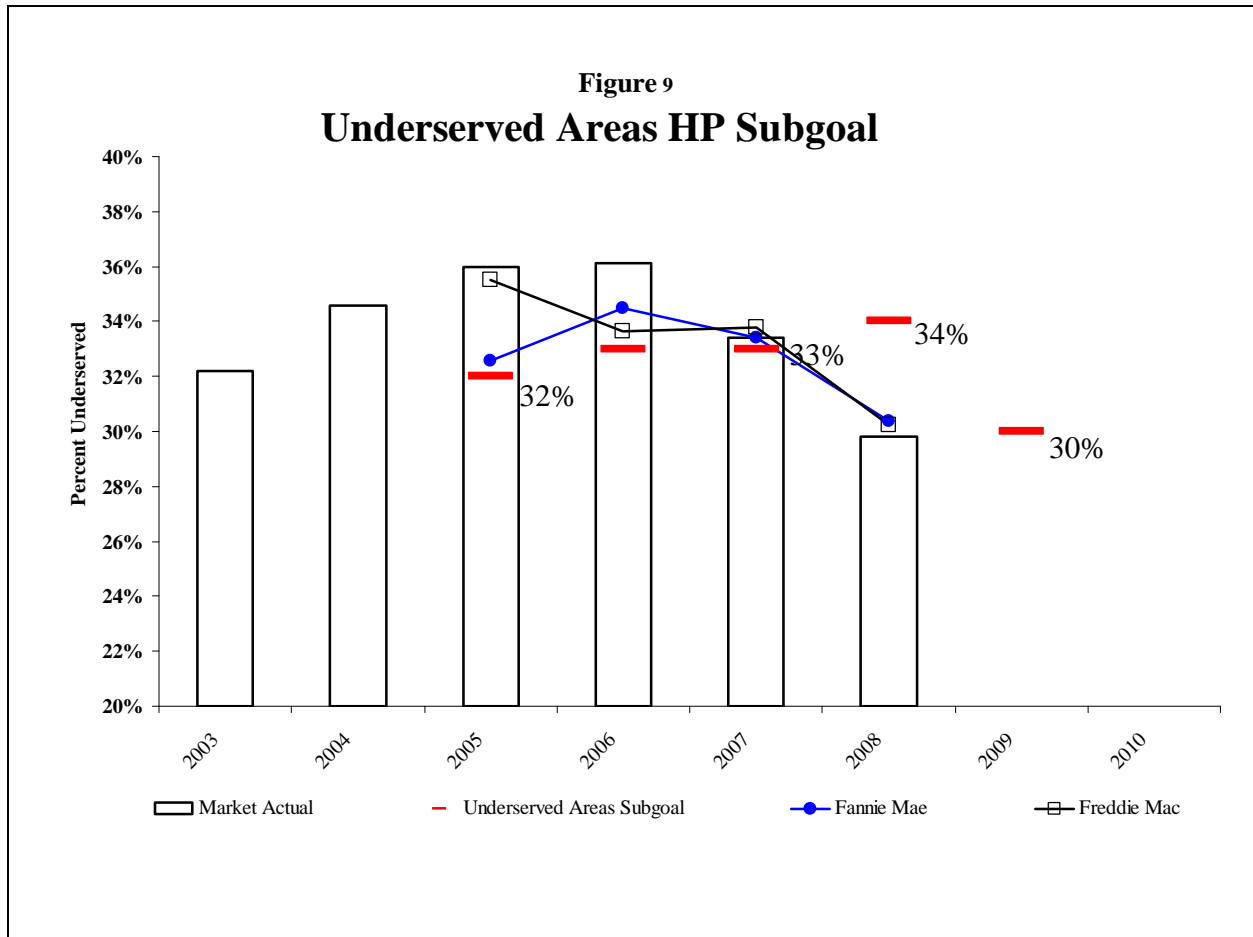
Source: Home Mortgage Disclosure Act and Enterprise data. Figure 9 shows the special affordable subgoals HUD and FHFA established between 2005 and 2009 (the red lines), and estimates of actual market activity (the blank bars) and the Enterprises' actual special affordable subgoal performance from 2004 to 2008.

The housing goals for 2005 to 2008 were set in 2004, assuming the “normal” market environment. However, the entire 2004 to 2008 period was marked by above-average levels of refinancing, first as part of the subprime and “no-documentation” mortgage boom and then as mortgagors took advantage of lower interest rates after the market collapse. From 2004 to 2006, goal-qualifying shares of actual market activity were higher than the levels previously projected for those years. Structural changes in the market during 2006 to 2008, which were not anticipated in 2004, pushed the actual market goal qualifying shares below the housing goals set for 2007 and 2008. In 2009, FHFA determined that two of the 2008 housing goals (i.e., low- and moderate-income and special affordable goals) and all three housing subgoals were infeasible.<sup>12</sup>

<sup>12</sup> FHFA, March 16, 2009. Final Feasibility Determination on 2008 Housing Goals Compliance, <http://www.fhfa.gov/webfiles/2043/3-16AllisonFNMFeasibilityLetter.pdf> for Fannie Mae and [http://www.fhfa.gov/webfiles/2044/Freddie\\_Mac\\_Infeasibility\\_Letter\\_2.pdf](http://www.fhfa.gov/webfiles/2044/Freddie_Mac_Infeasibility_Letter_2.pdf) for Freddie Mac.



Previously, HUD had determined that the low- and moderate-income and special affordable subgoals for 2007 were infeasible.<sup>13</sup>



Source: *Home Mortgage Disclosure Act and Enterprise data*. Figure 9 shows the underserved areas subgoals HUD and FHFA established between 2005 and 2009 (the red lines), and estimates of actual market activity (the blank bars) and the Enterprises' actual underserved areas subgoal performance from 2004 to 2008.

While the market estimation process worked adequately in projecting goal qualifying shares for “normal” home purchase environments, it is clear from the data that when the market deviated significantly from such an environment, the housing goals no longer were consistent with the shares of affordable loans actually being originated in the market. Therefore, going forward, FHFA is exploring goal setting methodologies that are more adaptive to contemporary market conditions, whether prospectively or retrospectively. Given the complexities of the mortgage market, and the difficulties of forecasting market conditions the further into the future one goes, FHFA is also considering shorter time periods over which to set housing goals prospectively.

<sup>13</sup> HUD, April 24, 2008. [http://www.fhfa.gov/webfiles/349/HMG\\_MAE\\_-\\_2007\\_Feasibility\\_-\\_April\\_2008.pdf](http://www.fhfa.gov/webfiles/349/HMG_MAE_-_2007_Feasibility_-_April_2008.pdf) and [http://www.fhfa.gov/webfiles/353/HMG\\_MAC\\_-\\_2007\\_Feasibility\\_-\\_April\\_2008.pdf](http://www.fhfa.gov/webfiles/353/HMG_MAC_-_2007_Feasibility_-_April_2008.pdf).



## Appendix A

### A.1. the Market Model Methodology for the 1993 – 2009 Housing Goals

The U.S. Department of Housing and Urban Development's (HUD's) methodology for estimating the size of the home mortgage market took several steps. The first step was to estimate the number of units expected to be financed with new conventional conforming mortgages in the overall market each year separated by property and owner type. The second step was to estimate the percentage ranges of goal and subgoal qualifying units among the units expected to be financed with conventional conforming loans for each property and owner type. A third step, the result from multiplying the estimates from the first step by the percentage ranges in the second step and summing the result, gave the estimated size or performance of the overall market. This process was repeated for each goal. The Federal Housing Finance Agency (FHFA) followed this methodology in estimating the home mortgage market in 2009.

To accomplish the first step noted above, HUD analyzed the single-family and multifamily mortgage markets separately. Single-family refers to one- to four-unit properties, and multifamily to five or more units. The process began by estimating the total dollar volume of single-family mortgage originations and separating out the portion expected to comprise conforming conventional loans. "Conforming conventional" refers to nongovernment-backed loans within Fannie Mae's and Freddie Mac's (the Enterprises') conforming loan limits.

To analyze the single-family mortgage market, HUD's market model categorized conforming conventional loan volumes by loan purpose (home purchase or refinance). HUD then converted the purchase and refinance dollar volumes to the number of mortgages originated using information on average loan sizes. Finally, HUD estimated the number of units attributed to these loans by first separating owner-occupied properties from non-owner-occupied (investor) properties for both purchase and refinance mortgages. The owner-occupied properties were further divided into one-unit and two- to four-unit properties. The two- to four-unit properties were multiplied by the average number of rental units to estimate the number of rental units in owner-occupied single-family properties.<sup>14</sup> Investor loans, which include properties with one to four units, were also similarly converted to the estimated number of rental units. The units by property type were then converted into the percent owner-occupied and the percent rental units associated with the single-family mortgage market.

For the multifamily market, HUD estimated the annual dollar volume of conventional multifamily mortgage originations and the annual average loan amount per unit financed. From these estimates, HUD was able to estimate the number of multifamily units financed each year as a percentage share of the total (both single-family and multifamily) dwelling units financed. This percentage share, called the "multifamily mix,"

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<sup>14</sup> Based on the 2001 Residential Finance Survey, there is an average of 2.2 housing units per mortgage for 2-4 unit properties (one of the units is owner-occupied, thus the multiplier is 1.2 after subtracting the owner-occupied unit) and 1.3 units per mortgage for single-family investor properties.



was an important parameter in HUD's model because the multifamily segment of the mortgage market has a disproportionate importance for the housing goals, as most multifamily rental units are occupied by households with low or moderate incomes.

In the second step of the process, HUD projected the expected ranges of single-family owner-occupied units that would qualify for the housing goals for home purchase mortgages. Then HUD's model projected the overall goals performance by combining the single-family owner-occupied segment with the projected goal performances of the single-family rental and the multifamily segments weighted by the property types calculated in the first step. The latter require estimates to be made of the investor mortgage share of the overall single-family market and the multifamily mix. Units associated with B- and C-grade loans (single-family owner-occupied and investor owned) are removed from the overall goals and subgoals qualifying estimates.

## **A.2. Basic Equations for Determining Units Financed in the Mortgage Market**

Below are the computations HUD used to produce the property share estimates in the first step of the market methodology described in section A.1.

### **a. Single-Family Units**

The number of single-family units financed by conventional conforming mortgages is calculated using the following equations:

1) The dollar volume of conventional conforming single-family mortgages (CCSFM\$) is derived as follows:<sup>15</sup>

$$(1) \quad \text{CCSFM\$} = \text{CONV\%} * \text{CONF\%} * \text{SFORIG\$}$$

Where

CONV% = conventional mortgage originations (measured in dollars) as a percent of total mortgage originations.

CONF% = conforming mortgage originations (measured in dollars) as a percent of conventional single-family originations.

SFORIG\$ = dollar volume of single-family one- to four-unit mortgages.

2) The number of conventional conforming single-family mortgages (CCSFM#) is derived as follows:

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<sup>15</sup> Sources for inputs to the model include the Mortgage Bankers Association, Inside Mortgage Finance and the Enterprises for estimates of the total single-family mortgage volume and the refinance rate; HMDA for conventional and conforming market shares; and the Residential Finance Survey for identifying the owner-occupied and rental unit components of the single-family mortgage market.



$$(2) \quad \text{CCSFM\#} = ((\text{CCSFM\$} * (1 - \text{REFI}))/\text{PSFLOAN\$}) + ((\text{CCSFM\$} * \text{REFI})/\text{RSFLOAN\$})$$

Where

REFI = the refinance rate.

PSFLOAN\$ = the average conventional conforming purchase mortgage amount for single-family properties.

RSFLOAN\$ = the average conventional conforming refinance mortgage amount for single-family properties.

3) The total number of single-family mortgages is divided among the three single-family property types.

$$(3a) \quad \text{SFOM\#} = \text{number of owner-occupied, one-unit mortgages} \\ = \text{CCSFM\#} * \text{share of single-family mortgages that are} \\ \text{associated with owner-occupied, one-unit properties.}$$

$$(3b) \quad \text{SF2\_4M\#} = \text{number of owner-occupied, two-to-four unit mortgages} \\ = \text{CCSFM\#} * \text{share of single-family mortgages that are} \\ \text{associated with owner-occupied, two-to-four unit} \\ \text{properties.}$$

$$(3c) \quad \text{SFINVM\#} = \text{number of one-to-four unit investor mortgages} \\ = \text{CCSFM\#} * \text{share of single-family mortgages that are} \\ \text{associated with one-to-four unit investor properties.}$$

4) The number of dwelling units financed for the three single-family property types is derived as follows:

$$(4a) \quad \text{SFO} = \text{SFOM\#} + \text{SF2\_4M\#} = \text{number of owner-occupied dwelling} \\ \text{units financed.}$$

$$(4b) \quad \text{SF2\_4} = 1.2 * \text{SF2\_4M\#} = \text{number of rental units in 2-4 properties} \\ \text{where an owner occupies one of the units.}$$

$$(4c) \quad \text{SFINVESTOR} = 1.3 * \text{SFINVM\#} = \text{number of single-family investor} \\ \text{dwelling units financed.}$$

5) Summing equations 4a-4c gives the projected number of newly-mortgaged single-family units (SFUNITS):

$$(5) \quad \text{SFUNITS} = \text{SFO} + \text{SF2\_4} + \text{SFINVESTOR.}$$

b. Multifamily Units



The number of multifamily dwelling units (MFUNITS) financed by conventional conforming multifamily originations is calculated by the following series of equations:

Given

$$(5a) \quad \text{TOTAL} = \text{SFUNITS} + \text{MFUNITS}$$

and

$$(5b) \quad \text{MFUNITS} = \text{MF\_MIX} * \text{TOTAL}$$

Where

MF\_MIX = the “multifamily mix”, or the percentage of all newly-mortgaged dwelling units that are multifamily

This yields

$$(5c) \quad \text{MFUNITS} = \text{MF\_MIX} * (\text{SFUNITS} + \text{MFUNITS})$$

or

$$= [\text{MF\_MIX} / (1 - \text{MF\_MIX})] * \text{SFUNITS}$$

c. Total Units Financed

The total number of dwelling units financed by the conventional conforming mortgage market (TOTAL) can be expressed in three ways:

$$(6a) \quad \text{TOTAL} = \text{SFUNITS} + \text{MFUNITS}$$

$$(6b) \quad \text{TOTAL} = \text{SFO} + \text{SF2\_4} + \text{SFINVESTOR} + \text{MFUNITS}$$

$$(6c) \quad \text{TOTAL} = \text{SFO} + \text{SFRENTAL} + \text{MFUNITS}$$

Where

$$\text{SFRENTAL} = \text{SF2\_4} + \text{SFINVESTOR}$$

### A.3. Treatment of B- and C-Grade Loans<sup>16</sup>

In terms of credit risk, subprime loans (B- and C-grade loans as well as A-minus grade loans) include a wide range of mortgage types. The Enterprises were involved in this market both through specific program offerings and through purchases of private-label

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<sup>16</sup> See Bunce, Harold L. 2007, *The GSEs' Funding of Affordable Loans: A 2004-2005 Update*, Working Paper No. HF-018. Washington, D.C., Office of Policy Development and Research, U.S. Department of Housing and Urban Development.



securities backed by subprime loans. B- and C-grade loans have much higher delinquency rates than A-minus loans.

For purposes of calculating goal qualifying loans, HUD and FHFA generally excluded B- and C-grade loans before estimating the overall market and the goal and subgoal shares. The B- and C-grade market was estimated using data on actual market performance primarily from Home Mortgage Disclosure Act (HMDA) information submitted by lenders. The HMDA data enable us to identify the conventional conforming market (in metropolitan areas), but the data do not explicitly identify loans that are B- and C-grade. Prior to 2004, when analyzing historical HMDA data, HUD estimated the effect of removing B- and C-grade mortgages by identifying loans made by lenders who primarily served the subprime market and by weighting the total number of reported loans made by these lenders by 50 percent.

For the 2004 to 2008 period, HUD and FHFA estimated the effect of removing B- and C-grade mortgages by removing all loans with a reported annual percent rate spread above a level that varied by year, i.e., above a threshold rate spread. This is possible because starting in 2004; loans reported under HMDA include information on the rate spread between the annual percentage rate of the loan and the contemporaneous U.S. Treasury rate of comparable maturity. In HMDA, lenders only had to report the rate spread for loans if the rate spread exceeded the higher-cost threshold of 3 percent for first liens and 5 percent for subordinate liens. Because higher-cost loans (those exceeding the HMDA thresholds) are highly correlated with the subprime portion of the market, HUD and FHFA used these reported higher-cost loans as a starting point. HUD and FHFA performed several analyses on the HMDA data to estimate a threshold rate spread above which would denote B- or C-grade mortgages.

For the 2006-2008 HMDA data, FHFA determined, using data from First American LoanPerformance to estimate annual percentage rates, that subprime first-lien loans in the B and C grades had all-in yields that were typically 400 basis points or more above a comparable maturity U.S. Treasury rate. This spread includes the predominant subprime loan type in 2006—specifically, the 2/28 subprime hybrid adjustable-rate mortgage, which typically had an initial below-market or teaser rate that would ultimately be fully indexed to the six-month London Interbank Offered Rate (LIBOR).

For 2005 HMDA data, many of the 2/28 subprime hybrid adjustable-rate mortgages did not exceed the 300 basis point annual percentage rate spread threshold for reporting the spread for first-lien mortgages. This occurred because the interest rate yield curve was steeper in 2005, lowering the annual percentage rate spread for hybrid adjustable rate mortgages indexed to a short-term rate (LIBOR) relative to the 30-year U.S. Treasury rate. For the 2005 data, HUD used a rate spread cut-off of 530 basis points to eliminate about half of the subprime loans identified by *Inside Mortgage Finance*. For 2004 HMDA data, a similar rate spread cut-off of 380 basis points was selected to eliminate about half of the subprime loans identified by *Inside Mortgage Finance*.



## Appendix B

### Tables



**Table B.1**  
**The Enterprise Housing Goals**  
**The Market, Fannie Mae, and Freddie Mac Performance**

Year	Low- and Moderate-Income Borrowers <sup>1</sup>											
	Main Goal					Home Purchase Subgoal						
	Estimated Market	Goal	Actual Market	Fannie Mae Performance	Freddie Mac Performance	Actual Market	Fannie Mae Performance	Freddie Mac Performance	Subgoal <sup>2</sup>	Actual Market	Fannie Mae Performance	Freddie Mac Performance
1996	48% - 52%	40%		45.6%	41.1%							
1997	48% - 52%	42%		45.7%	42.6%							
1998	48% - 52%	42%		44.1%	42.9%							
1999	48% - 52%	42%		45.9%	46.1%							
2000	48% - 52%	42%		49.5%	49.9%							
2001	50% - 55%	50%		51.5%	53.2%							
2002	50% - 55%	50%	50.0%	51.8%	50.5%							
2003	50% - 55%	50%	52.9%	52.3%	51.2%				<i>n.a.</i>	45.2%	<i>n.a.</i>	<i>n.a.</i>
2004	50% - 55%	50%	58.1%	53.4%	51.6%				<i>n.a.</i>	45.5%	<i>n.a.</i>	<i>n.a.</i>
2005	51% - 56%	52%	57.2%	55.1%	54.0%				<b>45%</b>	44.5%	44.6%	46.8%
2006	51% - 56%	53%	55.4%	56.9%	55.9%				<b>46%</b>	39.5%	46.9%	47.0%
2007	51% - 56%	55%	52.4%	55.5%	56.1%				<b>47%</b>	41.9%	42.1%	43.5%
2008	51% - 56%	56%	53.6%	53.7%	51.5%				<b>47%</b>	40.3%	38.8%	39.3%
2009	39% - 45%	43%	----- <sup>3</sup>	-----	-----				<b>40%</b>	-----	-----	-----

Source: Home Mortgage Disclosure Act and Enterprise data.

<sup>1</sup> Low- and moderate-income borrowers or renters are defined as families earning no more than the area median income where they reside.

<sup>2</sup> The home purchase subgoal was set at the estimated market share for mortgages on owner-occupied properties in metropolitan areas.

<sup>3</sup> 2009 performance data are not available at the time of publication.

**Table B.2**  
**The Enterprise Housing Goals**  
**The Market, Fannie Mae, and Freddie Mac Performance**

Year	Special Affordable Borrowers <sup>1</sup>									
	Main Goal					Home Purchase Subgoal				
	Estimated Market	Goal	Actual Market	Fannie Mae Performance	Freddie Mac Performance	Actual Market	Fannie Mae Performance	Freddie Mac Performance	Subgoal <sup>2</sup>	Performance
1996	20% - 23%	12%		15.4%	14.0%					
1997	20% - 23%	14%		17.0%	15.2%					
1998	20% - 23%	14%		14.3%	15.9%					
1999	20% - 23%	14%		17.6%	17.2%					
2000	20% - 23%	14%		19.2%	20.7%					
2001	23% - 26%	20%		21.6%	22.6%					
2002	23% - 26%	20%	23.5%	21.4%	20.4%					
2003	23% - 26%	20%	24.5%	21.2%	21.4%	16.5%	n.a.	n.a.	n.a.	n.a.
2004	23% - 26%	20%	28.0%	23.6%	22.7%	14.8%	n.a.	n.a.	n.a.	n.a.
2005	23% - 27%	22%	27.9%	26.3%	24.3%	16.1%	17%	17%	17.0%	17.7%
2006	23% - 27%	23%	27.5%	27.8%	26.4%	14.1%	17%	17%	18.0%	17.0%
2007	23% - 27%	25%	24.7%	26.8%	25.8%	15.5%	18%	18%	15.5%	15.9%
2008	23% - 27%	27%	26.5%	26.4%	23.1%	15.1%	18%	18%	13.6%	15.1%
2009	15% - 19%	18%	----- <sup>3</sup>	-----	-----	-----	14%	14%	-----	-----

Source: Home Mortgage Disclosure Act and Enterprise data.

<sup>1</sup> Special affordable borrowers or renters are defined as families earning no more than 60 percent of area median income or borrowers or renters residing in low-income census tracts and earning no more than 80 percent of area median income.

<sup>2</sup> The home purchase subgoal was set at the estimated market share for mortgages on owner-occupied properties in metropolitan areas.

<sup>3</sup> 2009 performance data are not available at the time of publication.



**Table B.3**  
**The Enterprise Housing Goals**  
**The Market, Fannie Mae, and Freddie Mac Performance**

Year	Underserved Areas <sup>1</sup>									
	Main Goal					Home Purchase Subgoal				
	Estimated Market	Goal	Actual Market	Fannie Mae Performance	Freddie Mac Performance	Actual Market	Fannie Mae Performance	Freddie Mac Performance	Subgoal <sup>2</sup>	Performance
<b>1996</b>	25% - 28%	<b>21%</b>		28.1%	25.0%					
<b>1997</b>	25% - 28%	<b>24%</b>		28.8%	26.3%					
<b>1998</b>	25% - 28%	<b>24%</b>		27.0%	26.1%					
<b>1999</b>	25% - 28%	<b>24%</b>		26.8%	27.5%					
<b>2000</b>	25% - 28%	<b>24%</b>		31.0%	29.2%					
<b>2001</b>	29% - 32%	<b>31%</b>		32.6%	31.7%					
<b>2002</b>	29% - 32%	<b>31%</b>	34.0%	32.8%	31.0%					
<b>2003</b>	29% - 32%	<b>31%</b>	33.7%	32.1%	32.7%			<i>n.a.</i>	32.2%	<i>n.a.</i>
<b>2004</b>	29% - 32%	<b>31%</b>	42.2%	33.5%	32.3%			<i>n.a.</i>	34.6%	<i>n.a.</i>
<b>2005</b>	35% - 39%	<b>37%</b>	43.9%	41.4%	42.3%			<b>32%</b>	36.0%	35.5%
<b>2006</b>	35% - 39%	<b>38%</b>	44.0%	43.6%	42.7%			<b>33%</b>	36.1%	33.6%
<b>2007</b>	35% - 39%	<b>38%</b>	40.1%	43.4%	43.1%			<b>33%</b>	33.4%	33.8%
<b>2008</b>	35% - 39%	<b>39%</b>	41.8%	39.4%	37.7%			<b>34%</b>	29.8%	30.3%
<b>2009</b>	30% - 35%	<b>32%</b>	----- <sup>3</sup>	-----	-----			<b>30%</b>	-----	-----

Source: Home Mortgage Disclosure Act and Enterprise data.

<sup>1</sup> The underserved areas goal targeted borrowers and renters residing in lower income areas (90 percent of area median income in metropolitan areas and 95 percent of area median income in nonmetropolitan areas), or higher minority areas (tract minority percentage at or above 30 percent where the tract median income is no more than 120 percent of area median income).

<sup>2</sup> The home purchase subgoal was set at the estimated market share for mortgages on owner-occupied properties in metropolitan areas.

<sup>3</sup> 2009 performance data are not available at the time of publication.

