

HOME AFFORDABLE MODIFICATION PROGRAM BASE NET PRESENT VALUE (NPV) MODEL SPECIFICATIONS

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Overview

As a part of the Making Home Affordable Program, we are providing standardized guidance and a base net present value (NPV) model described herein that any servicer who participates in the Home Affordable Modification Program (HAMP) can use or, if eligible, customize into a proprietary NPV model. The base NPV model is illustrative of an NPV model that meets the specifications put forward under the Making Home Affordable Program. Servicers are not precluded from using the illustrative model for making program NPV determinations. It is our expectation that servicers may use the Base NPV Model Documentation to customize the model based on their individual portfolio experience – all within the standardized guidelines put forward for the model under the program. The base NPV model will provide consistency in NPV calculations for the Home Affordable Modification Program and help the industry move toward a more standard process for evaluating the NPV of mortgages for purposes of making modifications.

A participating servicer in the Home Affordable Modification Program must modify any loan that meets the program's eligibility criteria if the modification tests "positive" for NPV. When mortgage modifications have a positive NPV, it is in the best interests of lenders, servicers, investors, and borrowers to modify mortgages to reduce the risk of foreclosure. The Home Affordable Modification Program increases the potential number of mortgage modifications that will have a positive NPV, resulting in more servicers modifying mortgages, and keeping more Americans in their homes. The Home Affordable Modification Program specifies a precise method for determining NPV and provides a base NPV model that any servicer can use or customize into a proprietary NPV model that satisfies all of the program's methodological requirements.

Under the program, a defined set of parameters for the base NPV model can be customized for each servicer. Every servicer is given discretion, within specified limits, to choose a discount rate. In addition, larger servicers are given discretion to develop portfolio-specific default rates. These customization capabilities are built into the base NPV model to preserve the ability of servicers, lenders, and investors to tailor the base NPV model to reflect the unique characteristics of the loans that they service or own, and to incorporate knowledge gained from years of working with those particular groups of mortgages. For other servicers, the baseline parameters can provide a sufficient NPV tool to evaluate loans being considered for modification.

Net Present Value of Modification

In general, NPV refers to the value today of a cash-generating investment – such as a bond or mortgage loan. When an investor is faced with a choice between two alternative investments – specifically, between the timing and amounts of the cash flows for each investment – the investor obviously prefers the choice that has a higher present value.

In the context of a mortgage borrower who has become distressed, the investor – or a third party servicer, acting on behalf of the investor – faces a choice of whether to modify the mortgage or leave it as-is. Each choice

generates expected cash flows, and the present values of these two cash flows are likely to be different. If the loan is modified, there is a greater chance that the borrower will eventually be able to repay the loan in full. If not, there is a higher likelihood that the loan will go to foreclosure, and the investor will absorb the associated losses. If the NPV of the modified loan is higher than the NPV of the loan as-is, a modification is said to be “NPV positive.”

The Making Home Affordable Program is structured to produce modifications that are more likely to test NPV positive, increasing the number of modifications that will be done and keeping more Americans in their homes. It does this, first, by lowering the probability that borrowers will default by making borrower payments more affordable and, second, by providing incentive payments that are added to cash flows received by lenders (or investors).

If a borrower meets the eligibility criteria for the Home Affordable Modification Program, a servicer will adjust the terms of the borrower’s loan (modify the loan) to reduce the borrower’s payment to the program’s target front-end debt-to-income (DTI) ratio of 31 percent. At a 31 percent DTI, the borrower will have a monthly mortgage payment that is more affordable over the long term, so that the borrower will be more able to afford to stay in his or her home.

Servicers must reduce payments in the precise manner specified by the Making Home Affordable Program (the “Standard Waterfall”), starting with reducing the interest rate on the mortgage. Once the servicer knows which loan terms will change, the servicer is ready to run an NPV model calculation. If the expected value to the lender of the loan after a HAMP modification exceeds the expected value of the same loan to the lender if it is not modified, then the NPV test result is positive and the servicer must modify the loan.


Requiring servicers to modify all NPV-positive loans ensures that there is help for all distressed borrowers when an objective test demonstrates the modification will benefit both the borrower and the investor. The program does not require the servicer to modify the loan if the modification tests negative, though the servicer must consider other ways to prevent foreclosure.

The Base NPV Model

The program supplies a base NPV model that any servicer may use to satisfy the requirement to modify all eligible loans that test NPV positive for modification. Large servicers – those having a book of business exceeding \$40 billion – have some discretion to customize the base NPV model with respect to two important inputs, the expected default rates for loans that are not modified and the re-default rates for loans that are modified, as discussed further below.

Both the base NPV model and a servicer’s proprietary customized version will:

1. Compute the net present value of the mortgage assuming it is not modified.
 - a. Determine the probability that the mortgage defaults.
 - b. Project the future cash flows of the mortgage if it defaults and the present value of these cash flows.
 - c. Project the future expected cash flows of the mortgage if it does not default and the present value of these cash flows.

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- d. Take the probability weighted average of the two present values.
 2. In the same manner, compute the net present value of the mortgage assuming it is modified, incorporating the effects on cash flows and performance of the modification terms and subsidies provided by the Home Affordable Modification Program.
 3. Compare the two present values to determine if the HAMP modification is NPV positive.

An NPV model used in the HAMP takes into account the principal factors that can influence these cash flows, including:

1. The value of the home relative to the size of the mortgage.
2. The likelihood that the loan will be foreclosed on.
3. Trends in home prices.
4. The cost of foreclosure, including:
 - a. legal expenses,
 - b. lost interest during the time required to complete the foreclosure action,
 - c. property maintenance costs, and
 - d. expenses involved in reselling the property.
5. The cost of conducting a modification, including:
 - a. a lower monthly payment from the borrower,
 - b. the likelihood a borrower will default even after the loan is modified,
 - c. financial incentives provided by the government, and
 - d. the likelihood that a loan will be paid off before its term expires (prepayment probability).

The base NPV model was designed by an expert working group including the Department of the Treasury, the Federal Deposit Insurance Corp., the Federal Housing Finance Agency, Fannie Mae, and Freddie Mac. It was designed specifically for the Home Affordable Modification Program. The base NPV model reflects aggregate data across many servicers, as well as the professional judgment of the working group.

Individual servicers have their own unique experience with the loans they service. The program permits servicers to customize the base NPV model to reflect that unique experience, within certain constraints and guidelines. As a result of customization, servicer NPV results and resulting modification decisions will likely vary even when borrowers' circumstances appear to be similar, but the results will be more accurate and provide a better gauge of appropriate modifications.

Key Parameters of the Base NPV Model and Customization of Inputs

Below is a summary of important parameters used in the Home Affordable Modification Program base NPV model, and the extent to which servicers may customize the parameters of the base NPV model.

Discount Rate: For a firm that owns a mortgage loan (the investor), the mortgage is a series of future cash payments expected from the borrower. But the promise of a payment in the future is worth less to an investor than cash today. How much less will depend on the discount rate – the higher the discount rate, the less a future payment is worth to an investor today. For example, a \$1,000 payment in one year would be worth about \$950 today using a 5 percent discount rate, and that same \$1,000 payment in a year would be worth about \$800 today using a 25 percent discount rate. In the base NPV model, all servicers are permitted limited discretion to adjust the discount rate by up to 250 basis points because different investors may place different values on future payments versus payments received today.

The discount rate the servicer uses may be as low as Freddie Mac's Primary Mortgage Market Survey (PMMS) weekly rate for 30-year fixed-rate conforming loans, and as high as the PMMS weekly rate plus 250 basis points. (To find the current PMMS go to <http://www.freddie.mac.com/pmms>.) With respect to loans that are not owned or guaranteed by Fannie Mae or Freddie Mac, the servicer may apply a single discount rate or two discount rates, one for loans in its own portfolio and another for loans serviced for all other investors. However, in no case may a servicer use a higher discount rate for loans in its own portfolio than the rate used for loans it services for other investors. With respect to loans owned or guaranteed by Fannie Mae or Freddie Mac, the servicer must apply the rate specified in Fannie Mae and Freddie Mac guidance.

Whatever discount rate the servicer chooses to use must be applied to both cash flows – that is, to the cash flows if the loan is modified under the Home Affordable Modification Program, as well as the cash flows if the loan is not modified.


Default Rates: The base NPV model projects default rates in two scenarios. It projects the probability of default if the loan is not modified and the probability of default if the loan is modified. Default rates depend on a number of variables particular to the loan. In general, however, the default rate is assumed to vary based on the credit quality of the borrower, the borrower's debt burden, the loan-to-value (LTV) of the home at the time of modification, and whether the loan is modified earlier or later in the delinquency cycle.

In the base NPV model, the default rates are generated by a model based on the performance of GSE and non-GSE loans. As Home Affordable Modification Program performance data become available, the base NPV model will be updated to reflect actual program experience.

Large servicers – those with a book exceeding \$40 billion – may customize the base NPV model to use modeled default rates that reflect their own portfolio experience. These customized default rate models must be empirically validated where possible, commercially reasonable, and will be subject to review and oversight by program monitors.

Default rates may vary significantly from one large servicer to another based on differences in their portfolios. Therefore, allowing servicers flexibility to use rates that reflect their own portfolio experience should result in more accurate evaluations of proposed modifications.

Home Prices: Future increases or decreases in home prices impact a borrower's willingness to stay in a house and potential financial loss in the event of foreclosure. A servicer must use the home price projection provided in the base NPV model. A servicer does not have discretion to substitute a different projection. The home price projection for the program has been made available by FHFA exclusively for this program, is based on data



from a broad cross section of mortgage transactions, and will be updated quarterly. The projection is not based on the FHFA House Price Index and does not represent an official forecast of FHFA or any other government agency.

REO Discount: Foreclosed or real estate owned (REO) properties generally sell for less than similar, non-distressed assets. This is referred to as the REO Discount and it recognizes the deterioration in perceived value that buyers often place on a home that has been foreclosed. The REO Discount is worse in some markets than in others. The REO Discount values used in the base NPV model are based on an analysis of sale prices of foreclosed homes sold by Fannie Mae and Freddie Mac. REO Discount values vary by state and home price. Servicers are not permitted to change the REO assumptions in the base NPV model.

