The National Collaborative on Home Energy Rating Systems and Energy-Efficient Mortgages

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Cost-effective energy efficiency technologies exist today that can dramatically reduce the $100 billion we spend each year on energy for our nation's housing. However, adoption of these technologies has been far slower than would be economically best for our nation and for individuals. One reason is that builders and home buyers have a strong tendency to limit the "up-front" cost of a residential property, even though this will increase future expenses. Mortgage loan practices reinforce this tendency. They fail to consider the lower *total* cost of owning an energy-efficient home when energy expenses are added to mortgage and tax payments.

In March 1991, the U.S. Department of Energy (DOE), in cooperation with the U.S. Department of Housing of Urban Development (HUD) initiated a National Collaborative to develop a voluntary national program encouraging energy efficiency in homes through mortgage incentives linked to home energy ratings. Participating in the Collaborative were representatives of the primary and secondary mortgage markets, builder and remodeler organizations, real estate and appraiser associations, the home energy rating system industry, utility associations, consumer and public interest groups, state and local government interest groups, and environmental organizations. Designed as a consensus process, the Collaborative's representatives from 25 "stakeholder" organizations received technical information from four technical advisory committees. The Collaborative met 10 times during 1991 and early 1992.

The Collaborative's goal--arrived at by consensus--was to write a Blueprint for Action by the end of 1991. This Blueprint describes the actions needed to implement a national program integrating mortgage incentives for energy efficiency with home energy rating systems. The national program is intended to be sensitive to the variety of state and local programs and construction variations, to encourage both efficiency and renewables, and to benefit all the parties. The paper describes the Collaborative's background, structure, and process. It presents the set of agreements on which consensus is being sought from organizations participating in the National Collaborative regarding the national program, elucidates areas of disagreement, and presents the next steps in implementing the national program.

Introduction

Cost-effective energy efficiency technologies[1] exist today that can dramatically reduce the $100 billion we spend each year on energy for our nation's housing. However, adoption of these technologies has been far slower than would be economically best for our nation and for individuals. One reason is that builders and home buyers have a strong tendency to limit the "up-front" cost of a residential property, even though this will increase future expenses. Mortgage loan practices reinforce this tendency. They fail to consider the lower *total* cost of owning an energy-efficient home when energy expenses are added to mortgage and tax payments.

One of the goals of the National Energy Strategy, developed at the direction of President Bush, was to counteract this tendency by developing reliable methods for rating the energy performance of residences and by encouraging mortgage-lending practices that fully reflect the value of lower energy operating costs. In response to that call for action, the U.S. Department of Energy, in cooperation with the U.S. Department of Housing and Urban Development, convened the National Collaborative on Home Energy Rating Systems and Mortgage Incentives for Energy Efficiency. The National Collaborative comprised members representing 25 organizations in the housing, mortgage finance, and energy industries, along with state and federal government, federally chartered financial institutions, and public interest organizations. Appendix A lists the member organizations. Four technical advisory committees supported their work.

The mission of the National Collaborative was to reach a consensus on a voluntary national program to link credible home energy rating systems with mortgage incentives for energy-efficient housing. *A Blueprint for Action*, the Collaborative's review draft report, describes the National Collaborative's findings and recommendations for creating such a program (National Collaborative 1992).[2]

Background

Widespread availability of energy-efficient mortgages (EEMs), teamed with accurate home energy rating systems (HERS), would make it easier and more affordable for Americans to live in energy-efficient homes. In fact, the Joint Center for Housing Studies (1986) has estimated that 250,000 more U.S. families could become first-time homeowners each year if EEMs were actively promoted and used. And the benefits to the environment of increasing the energy efficiency of the nation's housing stock would be significant.

In theory, a national EEM program would make available home mortgages that take into account the value of energy savings of the home. Home buyers could apply for EEMs when purchasing an energy-efficient home or when they are buying an existing home and planning to make immediate energy improvements to it. EEMs would have more favorable terms and qualifying conditions than conventional loans. Supporting the EEMs, a reliable HERS allows both lenders and home buyers to be confident of the predicted energy cost savings.

EEMs and HERS are not new. Numerous HERS[3] and energy-efficiency certification programs[4] have been started in the United States. For a variety of reasons, many have ceased to exist. They are sponsored by a number of different types of organizations with varying goals and program designs. Some examples follow.

- The Energy Rated Homes of America organization has programs in Alaska, Arkansas, Iowa, Rhode Island, Vermont, Virginia, and West Texas.
- Several states are beginning HERS programs, including Arizona, California, Colorado, Mississippi, Missouri, Nebraska, New York, and South Carolina.
- The cities of Fort Collins, Colo., and Austin, Tex., have rating programs.
- The "Good Cents" and "Super Good Cents" certification programs are supported by almost 300 utilities, especially in the South and the Pacific Northwest.

Energy-efficient mortgages have been available for more than 10 years. In the early 1980s, the five federal mortgage agencies and federally chartered financial institutions announced their willingness to buy, guarantee, or insure EEMs--Fannie Mae, Freddie Mac, FHA, DVA, and FmHA.[5] In a number of locales, HERS or energy certification programs have been approved as a means to access EEMs. In other areas, EEMs are sometimes used without a HERS basis.

However, despite the availability of both HERS and EEMs, the programs have been underutilized. Few buyers and lenders are aware of the EEM option. For lenders, it often is seen as representing additional paperwork. There is a lack of uniformity in the five different national EEM programs. Primary and secondary lenders are unsure of the reliability of the promised energy savings. There are limited data on the relationship between energy performance and housing values. And because homeowners are unaware of EEMs and do not inquire about them, this is perceived as a lack of market interest.

As a result, the potential national benefits of HERS and EEMs are not being realized. The benefits could include:

- An increase in the market penetration of energy-efficient new homes and energy improvements of existing homes
- A significant decrease in the estimated energy use by participating new and existing homes
- An increase in the number of families that could qualify as first-time homeowners by 250,000 each year (Joint Center for Housing Studies 1986)
- A significant reduction in environmental pollution
- An increase in house comfort.

Because of these potential benefits, HERS and EEMs have received the growing attention of the Administration and of Congress. The National Energy Strategy, issued in February 1991, stated:

"To encourage the more efficient use of mortgage financing for energy efficiency, the Departments of Energy and of Housing and Urban Development will increase financial and technical support to develop and encourage the voluntary acceptance of efficiency ratings and their use in home financing. After at least 5 years of support for voluntary adoption, it will be required that information on energy efficiency and information on the

available mortgage financing options be provided to home buyers prior to sale" (U.S. Department of Energy 1991, page 11).

Congress endorsed the use of energy-efficient mortgages in the Cranston-Gonzalez National Affordable Housing Act of 1990, which directs HUD to develop a uniform plan to make housing more affordable through mortgage financing incentives for energy efficiency. HUD is drawing on the recommendations of the National Collaborative in meeting that Congressional directive.

The National Collaborative's Structure and Process

The National Collaborative's members represented 25 organizations and interests which, working together, can make HERS and EEMs a national reality. Participating in the Collaborative were representatives of the primary and secondary mortgage markets, builder and remodeler organizations, real estate and appraiser associations, the home energy rating system industry, utility associations, consumer and public interest groups, state and local government interest groups, and environmental organizations.

The Collaborative Consensus Committee (CCC) was responsible for the final technical decisions and policy formulations of the National Collaborative. The CCC was supported by four technical advisory committees (TACs) in the subject areas of EEMs, HERS, Implementation, and Awareness. The CCC defined issues that it wanted the TACs to address. The TACs were responsible for bringing technical information to bear on these issues, presenting options with advantages and disadvantages, and making recommendations, as appropriate, to the CCC.[6]

The consensus-building process required two stages. Information building and issue definition occurred during the first four meetings. Consensus-building was emphasized during the last 5 meetings. The first meeting was held on March 26, 1991 and the final editing meeting on January 17, 1992. During this latter stage, the CCC considered draft versions of *A Blueprint for Action*, used as working tools to provoke discussion, revision, and conflict resolution. The process was intended to be inclusive; members agreed on the structure and process. Ideas were sought and considered, and members educated each other concerning their varied perspectives on issues. Members gained insight on how issues they considered to be important fit into a broader context.

The National Collaborative included participants with sharply different perspectives on some issues. Every statement included in the *Blueprint for Action* required the concurrence of every individual participant in the CCC. Yet in only one area--the EEM program--members "agreed to disagree" on some of the provisions of a national program. Yet even here, there was a broad consensus on many actions that can be taken immediately while the parties work together to clarify other features of the national effort.

Linking EEMS and HERS

A national system would consist of compatible mortgage programs that are user friendly and readily available in the marketplace. These programs should rely on nationally consistent, technically credible HERS programs. The Collaborative agreed that, in order to achieve these goals, a national EEMs/HERS program should incorporate the following principles.

1. It will apply to new and existing, energy-efficient and energy-inefficient housing.

2. The underwriting process will adequately recognize energy efficiency in making loans.

3. It will permit mortgage financing of energy-efficient construction and improvements.

4. It will indemnify lenders against added loss, if any, from borrower default.

5. It will provide a reliable technical basis to allow underwriting of mortgage loans by providing the energy cost savings information to the lender.

The Collaborative agreed upon several important issues to expedite the linkage of EEMs with HERS. These included the following:

- **Develop common standards for EEMs.** The mortgage-lending community (Fannie Mae, Freddie Mac, FHA, DVA, and FmHA) will work to develop common standards, forms, and practices to make EEM programs more user friendly.

- **Simplify EEMs procedures.** Each government agency and federally chartered financial institution will review its existing program to remove any unnecessary barriers and simplify the EEM process.

- **Sponsor educational, training, and promotional programs.** Lenders, appraisers, real-estate sales and marketing professionals, energy raters, and others will require training in using EEMs and HERS. Consumer

awareness of EEMs/HERS will need to be increased. Each government agency and federally chartered financial institution will promote the use of EEMs by increasing training and educational programs about them.

- **Gather existing data in one place.** The agencies and federally chartered financial institutions will take steps to collect information on their EEM programs and provide the data to a single organization for further analysis and reporting.

- **Analyze existing data to evaluate loss experience.** These institutions will cross-check EEM loan information that may currently exist on homes that have had an energy rating with the records of loans currently held to generate financial performance information.

- **Develop credible nationwide HERS program.** DOE, in concert with the HERS industry, will initiate the process to develop national guidelines for HERS programs that provide credible information for the mortgage-lending process and other housing-market participants.

- **Develop quality control mechanisms for HERS.** The HERS community will help assure credibility by developing and adopting effective quality-control programs governing software, personnel qualification and training, data collection, labeling, and other components of HERS programs.

The Collaborative recognized that the EEM effort is still in its formative stages. A great deal of data remains to be collected and analyzed and any risks to mortgage portfolios remain to be fully quantified.

Energy-Efficient Mortgages

The National Collaborative reached consensus agreements on a number of characteristics of a proposed national EEM program and recommended actions on eight EEM-related issues. Beyond this, there were a few issues around which consensus could not be reached. A number of nonlending members of the Collaborative advanced a concept about how an EEM program could work; the mortgage-lending members responded to those ideas. The consensus agreements and recommended actions are presented below, followed by the areas of disagreement.

Consensus Agreements on EEMs

The National Collaborative agreed that a national EEMs program should be:

- Widely available from all major lending and insuring agencies

- Uniform among different types of mortgage lending and insuring agencies

- Simple to use administratively

- Open to alternative, yet equivalent, approaches.

The Collaborative members agreed that an applicant for a loan to purchase or refinance a home meeting a nationally recognized voluntary consensus standard should be eligible for recognition of energy cost savings in the mortgage-qualifying process. Examples of such recognition could include increasing qualifying ratios[7] or adjusting one of the components used to calculate the ratios.

They further agreed that a qualified applicant for a standard mortgage may qualify for an energy-efficient mortgage covering the cost of improvements that are determined to be cost effective by a nationally recognized HERS. The EEM program may include a maximum cost limit for allowed improvements.

It was also agreed that lenders should be adequately indemnified for any additional risk assumed in financing the cost of energy-efficiency improvements. Further, Collaborative members said that underwriting procedures should recognize energy cost savings separately from compensating factors. Lenders, real-estate professionals, and appraisers should work to raise public awareness of home energy efficiency and related opportunities in the mortgage-lending process.

Following are the consensus agreements on 8 sets of recommended actions.

- **Potential risk.** Lenders should review existing data on EEM performance, collect new data, and work to devise an appropriate mechanism for indemnification, if appropriate.

- **Cost of energy-efficiency improvements.** Lenders should use projected energy cost savings as a separate

factor in borrower qualification. They should set no limit on the amount of improvements allowed, as long as proper underwriting standards are met. A credible national HERS program would permit accurate cost estimations.

- **Handling energy cost savings in lending.** Lenders should consider third-party indemnification of the increased mortgage amount due to the cost of energy-efficiency improvements.

- **Increased downpayment.** Adding energy-efficient improvements may increase the amount of the borrowers' downpayment. Lenders should consider third-party grants as appropriate borrower resources to offset the increase in downpayment.

- **Mortgage limits and improvement costs.** Maximum mortgage limits make it difficult to add the cost of energy improvements to mortgages that are already at or near the limit. As mortgage limits are set by legislation, the Collaborative recommended that current law be modified to increase the maximum mortgage limits for all energy-efficient mortgages. (Freddie Mac and Fannie Mae could not support having their loan limits changed; however, other groups could support this.)

- **Complexity and delay in EEMs.** Additional incentives, such as favorable interest rates, would be helpful in reducing administrative delay. As already noted, the lending community should work to eliminate barriers and develop a uniform, user-friendly EEM program.

- **Training needs.** Uniform EEM programs would make lender training easier. The lending community should promote the use of EEMs by increasing training and education programs.

- **Credible HERS programs.** A nationwide HERS program with standards and effective quality control mechanisms should form the basis for the EEM program and lender confidence in it.

Areas of Disagreement on EEMs

As mentioned, a number of nonlending members advanced the concept that an EEM program should implement certain characteristics in specific ways. To these nonlending members, an EEM means a mortgage on a residential property that recognizes the dollar value of savings of an efficient home. Such an EEM would qualify borrowers who would otherwise have qualified for a mortgage on a similar home without cost-effective energy-saving construction or improvement features. The elements of an EEM program they focused on included loan qualification for energy-efficient and inefficient homes, calculating the maximum loan available, downpayment assistance, maximum mortgage limits, and supplemental mortgage insurance.

- **Loan qualification for energy-efficient homes.**[8] For an energy-efficient home meeting a current industry standard (such as the latest version of the CABO Model Energy Conservation standard), the basic debt-to-income qualifying ratio should be increased by 2%. For efficient homes exceeding the standard, the added monthly cost savings should be subtracted from the normal housing costs (principal, interest, taxes, and insurance, or PITI) before calculating the qualifying ratio. This would increase the number of prospective buyers who could qualify to purchase an energy-efficient home.

- **Loans for improvements to inefficient homes.** For cost-effective energy efficiency improvements to inefficient homes (not meeting the standard), the energy cost savings resulting from the improvements should, at the purchaser's decision, be subtracted from the PITI. The loan's total amount should be increased by an amount equivalent to the present worth of the capitalization of the energy cost savings that will be realized.

- **Calculating maximum loan amount.** Mortgages are generally limited to a percentage of the appraised value, for example, 90% or 95%. For inefficient homes, the mortgage amount should be increased by the total cost of the improvements after the home's appraised value has been determined and the base loan has been approved. However, the increase should be limited to an amortized amount that can be paid for by the monthly energy cost savings. And the money for the energy improvements should be put into escrow at closing. For efficient homes, the mortgage amount should be increased by an amount up to 5% of the home's appraised value.

- **Downpayment assistance.** Federal, state, or other third party programs could provide grants to home buyers to cover the additional downpayment required to cover the incremental increase in loan amounts from the addition of energy-efficiency improvements. Lending institutions should accept the grant money as if it were the borrowers' own funds.

- **Supplemental mortgage insurance.** To minimize any potential added risk of default to lenders for the added mortgage value of EEMs, the amount added to the mortgage for the energy-efficiency features should be covered with supplementary mortgage insurance for 5 years.

The members of the National Collaborative who represented the mortgage-lending community[9] did not completely endorse or support the preceding suggested characteristics of an EEM program. They believe that the adoption of certain of these characteristics could expose the mortgage-lending community to additional risks and losses that are currently unknown and unquantified. This was unacceptable to them as it was inconsistent with their role of maintaining the stability of the national mortgage market. The issues on which no consensus was reached were as follows:

- **Property valuation.** The value of a property used in the mortgage underwriting process must be based on the property's market value. An increase in value of a property due to an energy-efficiency improvement must be based on the market's response to the improvement itself--not on its cost. Additional exposure to risk ensues if the market does not recognize the entire cost of an improvement as a dollar-for-dollar increase in the property value.

- **Borrower qualification--income and expense considerations.** The possibility of lower energy costs in an energy-efficient home is only one of the many factors that need to be evaluated in the mortgage underwriting process. Energy costs are not a fixed expense like the mortgage payment itself, property taxes, and insurance. In fact, energy costs vary greatly, depending on climate zone, weather conditions, and individual lifestyles. Because of this, the mortgage-lending community cannot accept an unknown level of default risk imposed by any formula approach to income qualification that assumes a theoretical reduction in fixed monthly mortgage payments based on an estimation of possible energy cost savings by the occupant/borrower. Such an approach would elevate a perception of possible reduced energy costs to a level of significance in the mortgage underwriting process for which no empirical basis currently exists. These estimated cost savings may be used as an additional factor in calculating borrower qualification, rather than as part of a specific formula or factor that has no relationship to the actual energy costs of a specific house.

- **Supplemental mortgage insurance.** For conventional mortgages, the use of supplemental mortgage insurance to cover any additional loss due to default may be unworkable because it transfers the risk to a private mortgage insurance company and rests on its ability to pay a claim. The financial stability of the insurer could be weakened. Also, the supplemental mortgage insurance would increase the borrowers' cost of obtaining a mortgage. In addition, the insurance industry is regulated at the state level, where regulations could prohibit mortgage insurers from issuing policies where the loan-to-value ratio exceeds 95%.

The mortgage-lending members said that the suggested EEM characteristics were unacceptable taken as a whole. They said that each member of the mortgage-lending community must analyze and maintain EEM programs in keeping with their respective roles and programs, in the context of the national mortgage market's needs. They said that they must balance the risks associated with the origination, purchasing, insuring, and guaranteeing of all mortgages, including EEMs, with the need to maintain financial stability and ensure the continuing availability of funds for the national mortgage market. However, they promised to continue to work toward a uniform national program to promote energy efficiency in housing. By making incremental advances based on appropriate risk assessment, the nation's new mortgage industry intends to remain sound while continuing to offer new mortgage financing opportunities.

Consensus Agreements on Home Energy Rating Systems

To a large extent, HERS in different locales have developed independently (Vories and George 1991). Because no single HERS model exists, new programs continue to expend significant resources on research and development. The local variation in the programs makes it impossible to build a universal link between HERS and a national EEM program. Further, most HERS use different calculational approaches, or "tools," with little or no documentation of technical accuracy. In fact, technical standards for HERS have never existed. Lenders and others have questioned the reliability of energy-use and cost savings estimates generated by HERS.

The Collaborative reached consensus on most of the characteristics of a national HERS program. A primary focus of the National Collaborative's HERS deliberations

was to define a set of guidelines that would address the concerns of technical credibility. These guidelines deal with the basic design and operation of HERS programs and set accuracy standards that "certified" HERS programs must meet if they are to participate in the national program. The guidelines are also designed to promote uniformity among different HERS to facilitate a uniform link to a national EEMs/HERS program.

At the same time, the Collaborative took care to specify *minimum* features to allow local programs substantial flexibility to meet local needs. This approach recognized that the national effort should build upon existing local HERS and bring them into a national framework, or umbrella, rather than strive to create a single, nationally administered HERS. The recommended guidelines are based on the desire of a linked EEMs/HERS program; however, they also provide useful guidance for independent HERS programs. Only programs that wished to be certified under the national EEMs/HERS program would have to meet these guidelines.

Design and Operation of HERS

The Collaborative agreed that the design and use of HERS tools should follow these principles.

- **Basic unit of measure.** Total annual energy use should be measured in Btu/year by fuel type.

- **Fuel neutrality.** This should be addressed by requiring verified HERS calculation tools to produce accurate energy-use and cost projections; other issues relating to energy type should be decided at the state or local level.

- **Treatment of occupant behavior.** A HERS calculation tool should rate the home using standardized occupancy assumptions based on average estimates for lifestyle parameters to account for average occupant behavior. These estimates should be as location-specific as possible and should be applied consistently.

- **Differentiation between new and existing housing.** Both should be treated identically from a technical standpoint in the calculation of energy use by HERS calculation procedures. In practice, specific HERS programs may offer different services with respect to each type.

- **Building types.** HERS should be applicable to multifamily, single-family, and manufactured housing. A HERS calculation tool should be certified or verified for those building types it is intended to rate.

- **Home features measured by a HERS.** A HERS calculation tool should provide the estimated annual energy performance of the building in Btu/year and dollars for fuel type. That number is composed of the energy use associated with the performance of the following:

  - Thermal envelope
  - Mechanical heating ventilating, and air conditioning (HVAC) system
  - External load controls[10]
  - Hot water service
  - Optional features, including hard-wired lights, major appliances and controls, and energy-storage systems.

- **Inclusion of innovative features.** The certifying process for HERS tools would allow qualification according to the building types, features, and climate zones for which a local HERS calculation tool is intended. Certified HERS should also provide for alternative rating calculation tools when a simplified input tool cannot handle particular buildings, energy features, or new technologies. A HERS should strive to keep pace with new technological developments by periodically upgrading its calculational tools.

Accuracy of HERS Output

The Collaborative identified two levels of accuracy: that of the HERS calculation tool and that of the entire delivered home energy rating system, including the energy inspection, translation of energy-inspection information to input data, the recommended cost-effective energy-efficiency improvements, the standardized occupant and operating assumptions, field inspections, and the use of the tool to produce an energy and dollar estimate.

The tool should accurately project energy use in both energy units and dollars. For a HERS calculation tool to be certified as part of a national program, it must demonstrate calculational accuracy within a prescribed range relative to benchmark results from state-of-the-art detailed simulation models. To maintain certification under the national HERS umbrella, HERS would be required to collect data, such as short-term data, long-term submetering data, or utility bill data to verify overall quality control and to allow periodic self-correction. Rater training and qualification should include a mix of classroom and on-site training, concluding with certification by testing and demonstration of proficiency. HERS programs should be responsible for the quality control of their raters.

Other Recommendations for HERS

The National Collaborative made five other recommendations concerning a national HERS program.

1. **HERS procedures for retrofits and renovations.** To be certified, HERS would be required to have a calculation tool that estimates affiliated savings taking into account the potential interactive effect of energy features on energy and cost savings.

2. **Procedures for rating groups of new buildings.** Building ratings should be permitted to be grouped when technically feasible, when quality control can be demonstrated, and when accuracy criteria will be met. Group ratings will reduce duplication of effort and cost and will provide a common basis for comparing homes. Groups ratings are most appropriate when applied to the same home design built multiple times on comparable sites, or when applied consistently within the criteria of a certification program. Homes can be spot-checked to verify the accuracy of the rating; each home would not have to be individually rated.

3. **Allowance of different rating approaches.** A single rating method and scale should be the basis for linking EEMs and HERS as an element of the national program. A "rating method," as used here, is the equation and associated inputs that describe the relationship of a rating to an amount of energy use, energy cost, or other measure of efficiency. A single rating method would facilitate linkage to a uniform national EEMs/HERS program. The Collaborative recommended further study to determine the form, parameters, and inputs of the rating method.

4. **Requirements for re-rating of homes.** Homes for which EEM financing is desired may need to be re-rated at the time of sale or refinancing if the lenders so require. If the rated home's features remain unchanged and the rating scale for that locale remains the same, the home may not need to be re-rated.

5. **National data base.** Lack of data is the largest hurdle to setting up a successful national EEMs/HERS program. Each HERS program in each jurisdiction should keep accurate records of every house rated. There needs to be a national data base on energy-rated homes and EEM homes. A national program should develop a set of guidelines for minimum requirements for state and local data bases to allow data retrieval and reporting to the national data base.

Conclusions

The National Collaborative agreed that much more remains to be done to fully develop and implement a national EEMs/HERS program. Participant groups can take action on their own to make further progress. Most items, however, will require a more organized effort. The Collaborative recommended that DOE, in collaboration with HUD, should initiate priorities among the following tasks and take appropriate actions. Included among the unfinished business is the following:

- Distribution of *A Blueprint for Action* for public comment and revision based on that comment

- Further development of program implementation mechanisms to develop and manage the following:

  - Technical clearinghouse
  - Information clearinghouse
  - HERS accreditation system
  - Rater credentialing system
  - Data collection system
  - Data analysis program
  - Quality assurance program

- Business plan

- Public information and education

- Labeling criteria

- HERS rating method

- A nationally recognized consensus standard to define energy efficiency

- An adequate indemnification mechanism

- Demonstration programs

- Common standards, form, and practices by the mortgage agencies and enterprises.

The National Collaborative, through a consensus-building process, has defined concepts for linking home financing to a successful national program of home energy rating systems. Substantial progress has been made in educating participants on the needs of both the energy rating and the home financing industries. Most importantly, a momentum has evolved that has the potential for results and ultimate realization of the National Collaborative's goals. To

sustain this momentum, a strategy is to conduct demonstration and field testing of pilot programs containing elements of the proposed EEMs/HERS program. Pilot tests could be initiated in several states and localities during 1992 to spur the needed data collection and analysis processes.

The HUD Task Force, charged with promulgating a uniform plan to make housing more affordable through mortgage financing incentives for energy efficiency, has responsibility to deliver its report in November 1992. Finally, the Collaborative recommended that a report summarizing progress made during 1992 should be prepared at the end of the year.

Acknowledgments

The valuable contributions of the Collaborative's members, those who served on technical committees, and staff are acknowledged. Without their dedication and commitment to a challenging task, the accomplishments reflected in this paper would not have been realized. The authors have expressed their thinking as faithfully as possible in reporting on the National Collaborative's outcomes.

Endnotes

1. "Energy efficiency" is intended to include both energy efficiency measures (such as insulation and low-emissivity windows) and renewable energy technologies (such as passive solar design and solar domestic hot water systems), the use of which reduces a home's consumption of utility-supplied energy.

2. *Blueprint* was published in March 1992 by the National Renewable Energy Laboratory, Golden, CO.

3. HERS measure and rate on a scale the relative energy efficiency of any house, regardless of age, efficiency, or fuel use. The rating is based on the thermal performance of the building envelope and the heating, ventilating, and air conditioning (HVAC) system and is obtained by an on-site inspection and calculations. HERS calculations include estimates of annual energy performance and costs and recommendations for cost-effective energy-efficiency improvements.

4. A pass/fail home energy-efficiency rating system, or "certification program," is typically operated by utilities, home builders' organizations, or not-for-profit organizations. Energy-efficiency standards for these programs are developed using local building characteristics, construction practices, and climatic conditions. They usually include thermal envelope efficiency criteria and space conditioning efficiency criteria. Certification programs generally rely on a specified inspection/verification process to ensure rating consistency. Houses either pass or fail the inspection for energy efficiency.

5. Federal National Mortgage Association, Federal Home Loan Mortgage Corporation, Federal Housing Administration, Department of Veterans Affairs, Farmers Home Administration.

6. The Collaborative's technical issue papers produced by the TACs, as well as special papers written by members of the CCC and others as part of the Collaborative process, are available in a separate volume, *Going National will HERS and EEMs: Issues and Impacts, The Collected Papers of the National Collaborative.*

7. Qualifying ratios are percentage ratios that compare borrowers' anticipated monthly fixed housing expense and total monthly obligations to borrowers' stable monthly gross income for the purpose of evaluating the likelihood of meeting expenses involved in home ownership.

8. An energy-efficient home is one that has been built or improved to at least a nationally recognized voluntary consensus energy performance standard.

9. The mortgage-lending community comprised those involved in determining now credit is granted in the secondary mortgage market, which provided more than $453 billion in mortgage financing in 1990.

10. External load controls are fixed or movable shading elements (e.g., awnings, wing walls, overhangs, eaves, and shade screens) that control solar heat gain to exterior envelope components.

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Appendix A. Organizations Represented in the Collaborative Consensus Committee

Alliance to Save Energy (ASE)
American Association for Retired Persons (AARP)
American Gas Association (AGA)
American Public Power Association (APPA)
American Society of Home Inspectors (ASHI)
Appraisal Institute (AI)
Association of Energy Efficient Mortgage Service Companies (AEEMSC)
California Home Energy Rating System, Inc. (CHERS)
Consumer Federation of America (CFA)
Edison Electric Institute (EEI)
Energy Efficient Builders Association(EEBA)
Energy Rated Homes of America (ERHA)
Farmers Home Administration (FmHA)
Federal Home Loan Mortgage Corporation (Freddie Mac)
Federal National Mortgage Association (FNMA - Fannie Mae)
Federal Housing Administration (FHA)
Federal Institutions Examination Council, Appraisal Subcommittee
Mortgage Bankers Association (MBA)
National Association of Home Builders (NAHB)
National Association of the Remodeling Industry (NARI)
National Association of REALTORS™ (NAR)
National Association of State Energy Officials (NASEO)
Natural Resources Defense Council (NRDC)
Southern Electric International, Good Cents Division
U.S. Department of Veterans Affairs (DVA)