



December 23, 2010

Regulations Division
Office of General Counsel
Department of Housing and Urban Development
451 7th Street, SW
Room 10276
Washington, DC 20410-0500

Re: *Comments on Notice of FHA PowerSaver Home Energy Retrofit Loan Pilot Program (Docket Number FR-5450-N-01)*

Dear Sir or Madam:

Thank you for your efforts to create the FHA Home Energy Retrofit Loan Pilot Program (“PowerSaver”), announced November 10, 2010 (Docket No. FR-5450-N-01).¹

On behalf of its more than 1.3 million members, the Natural Resources Defense Council (NRDC) respectfully submits our comments to the Department of Housing and Urban Development (HUD) on the PowerSaver pilot. NRDC has a long-standing history of working to overcome market failures that impede cost-effective investments in residential energy efficiency and has been actively examining the role of home energy costs in residential mortgage financing.

We wish to register our strong support for the objectives of this pilot program. Implemented in a thoughtful way, this program could enable homeowners to invest in cost-effective efficiency improvements, reducing their utility expenses and increasing the value of their homes. FHA also has an opportunity to account for energy costs and savings in the loan process which will enable more accurate and granular underwriting.

The benefits of enabling investment in energy efficiency go far beyond the homeowners making the home improvements. Added home improvement work could spur job growth in the hard-hit construction industry and improve America’s ability to recover from the current recession. And, reducing the energy use of homes will reduce emissions of toxic pollutants and greenhouse gases.

¹ 75 Fed. Reg. 69112-69120, Nov. 10, 2010

Section I. Comments Summary

Comment 1. Instead of limiting permitted improvements to pre-defined list of eligible measures, HUD should permit borrowers to fund only improvements that are determined to be cost effective by a home energy rater.

Using a pre-defined list of eligible measures will allow PowerSaver loans to fund projects that create no net energy savings for the homeowner. In fact, since homeowners' often make efficiency improvements in the context of upgrading existing space (like renovating a kitchen) or adding new space (like finishing a basement), many PowerSaver borrowers could have a new loan obligation plus higher energy costs from the new or upgraded space.

The pilot program, however, is intended to originate a pool of loans with the opposite credit profile. The objective is to identify homeowners with new loan payment obligations that are offset by energy savings. If the pilot is to produce comprehensible results, it should target loans of that type. Trying to unravel the data after the fact to identify such loans will be very difficult.

We suggest HUD require homeowners to obtain a home energy rating to verify that the funded home improvement measures are cost effective based on the expected energy savings. That is, the expected dollar amount of energy savings from a given improvement measure is greater than the expected monthly payment on a loan to fund the cost of that improvement. It means homeowners can expect to come out cash-flow positive after getting a loan to fund the improvements.

Certified home energy raters are equipped with technology and tools to perform the cost-effectiveness assessment quickly and reliably. This data point can be incorporated into the underwriting process, just as FHA lenders today review an appraised value (relying on the appraiser to use an approved methodology and data model) and a credit score (relying on credit agencies to maintain and apply their "black-box" models).

Because the results of the pilot program will provide important data that will be used as intelligence on the loan performance of home efficiency loans and has the potential to trigger changes in the market, it is critical to carefully control the pilot to test the central hypothesis.

Below at Section II of this document we provide HUD a full discussion of our reasoning for this Comment and provide specific ideas for implementation.

Comment 2. FHA should establish a plan to assure that work on the subject property meets the standards set forth in the eligible measures list and is installed correctly. Our proposal in Comment 1 would address this concern through the post-work review by the energy rater.

Comment 3. FHA should establish a plan to obtain reliable information for robust measurement and verification of the pilot program, including obtaining:

- a. information on all improvement work performed in the project, whether funded by PowerSaver proceeds or from other sources;*
- b. the expected energy savings of all improvements implemented;*

- c. *consumer permissions for HUD (or designated party) to obtain and review energy usage data from the utilities serving the home, and*
- d. *loan application data from lender.*

Comment 4. HUD should describe how lenders must treat projects funded by a PowerSaver loan that also include improvements not funded by the PowerSaver loan (e.g., a renovation or addition funded by customer cash or separate consumer loans that will also include certain efficiency features funded by PowerSaver). Our proposal in Comment 1 would largely address this concern because the energy rater would account for all proposed changes in the assessment of total energy savings.

Comment 5. NRDC comments to list of eligible measures are attached as Section III of this document, below. We comment on the existing list and suggest adding a new eligible measure: Replacement Windows. Our proposal in Comment 1 would largely obviate the need to prescribe eligible measures, because the home energy rater will identify the most cost-effective measures. If an eligible measures list is included along with our proposal in Comment 1, it need not contain substantial prescriptive guidance.

Section II. Background and Rationale for the PowerSaver Pilot

A. Energy Efficiency measures can be an attractive investment for Homeowners

Making home improvements that increase energy efficiency of the house can be an investment for the homeowner in a compelling and measurable way. In some houses, improvements such as more insulation or a high-efficiency air-conditioner, will deliver a regular dividend to the homeowner in the form of lower monthly utility bills for many years.

Because houses vary widely and are subject to unique sets of conditions, different efficiency measures will make sense for different homeowners. Decisions about which measures make sense and are economic will be based on many factors that can not be generalized nationally, including the cost of the project, the expected savings, the cash flow of the project, the expected time for pay-back, the increased comfort of the house, the increased value of the house, alternative uses for the available funds, climate zones, and others.

While some homeowners may undertake a substantial home improvement project focused on efficiency, we expect many homeowners to be interested in engaging in efficiency improvements in the context of other improvement projects. Upgrading space, such as renovating a kitchen, and adding new space, such as finishing a basement, are the most common projects in recent years.²

² See ServiceMagic "Home Remodeling and Repair Index," published at http://files.servicemagic.com/pdf/press/Remodel_and_Repair_Survey_Q3_10.pdf; and, [A Long-Term Outlook for Homeowner Remodeling Activity: Results and Implications](http://www.jchs.harvard.edu/publications/remodeling/n03-1_martin.pdf), Amal Bendimerad, Harvard Joint Center for Housing Studies, August 2007 http://www.jchs.harvard.edu/publications/remodeling/n03-1_martin.pdf.

It is not a simple task for a homeowner, or a typical contractor, to evaluate the added energy consumption to expect from newly added space, or to accurately estimate the energy savings to expect from efficiency features, or the net impact of a blended project.

Professional energy raters perform this function, however, and can identify and model the impact of a project with the specificity needed to enable a homeowner to evaluate the investment aspects of the project -- expected savings, the payback period, and other financial factors. There is a robust energy audit and rating profession that spans building sectors (residential, multi-family, commercial, and industrial), and raters employ diagnostic technology, software, and other tools that enable accurate measurement and verification.

B. Loans are needed, and the loan payment helps determine cost-effectiveness.

Efficiency improvements, in the right situation, can pay regular dividends in the form of reduced monthly utility bills. Many homeowners however will not have the available cash to pay the cost of the improvements. Financing the up-front cost can make sense because the monthly payment on the loan matches the timing of the expected savings.

There is a definite need for additional financing options. Consumers today typically seek to finance home improvements using cash-out refinancing, home equity loans (a loan secured by a subordinate lien), unsecured consumer loans, and even credit cards. These sources of financing are generally less accessible and more expensive than in recent years. A Fannie Mae unsecured loan that is often marketed for home improvements is nominally priced at around 14% annual interest rate, plus lender fees and costs.³ In contrast, a 30-year fixed rate mortgage loan to purchase a new or existing home is in the 4% to 5% range today.

The loan payment also provides the homeowner with a useful mechanism to identify “cost-effective” improvements. We expect many homeowners would opt to implement only measures that are expected to produce monthly savings equal to or exceeding the loan payment for the cost to implement the measures.⁴

C. The conventional loan framework mistreats borrowers with energy savings

In the framework used for conventional loans for home improvements (unsecured and secured), lenders assume the borrowers will have a new monthly payment obligation in the amount of the new loan payment. This approach simply imports the credit model traditionally used for purchase-mortgage loans. It is inaccurate in the home improvement context in two ways.

A homeowner implementing energy efficiency improvements can expect that the new payment obligation on the loan to be offset to some extent by the resulting energy savings. The amount of the off-set can be modeled. In fact, in many instances, the monthly utility

³ Financing Energy Efficiency in the Keystone State, State Energy Report, August 4, 2010 (published at <http://www.stateenergyreport.com>).

⁴ The tools used to determine cost effectiveness could use assumptions for basic loan terms to produce an approximate monthly payment or could use an actual monthly payment amount if the customer has already been pre-qualified for a loan.

savings from improvements will exceed the amount of the monthly payment on the loan, leaving the borrower in a better cash flow position after the loan than before. As noted above, armed with proper information, a homeowner should use the cash flow on the loan to guide the decision about which improvements to implement.

In contrast, a homeowner seeking a generic home improvement loan – adding new rooms in the attic, for example – will incur not only a new monthly loan payment obligation, but also can likely expect increased utility costs. Thus, today's framework permits a homeowner to borrow more than he or she can afford by failing to account for expected increased utility costs.

D. Loans to fund energy savings measures should perform better than modeled

Loans to borrowers who use the loan funds to improve energy efficiency of their house should be better loans than suggested by the traditional credit policy, because the conventional credit model ignores the extra income to the borrower from energy savings.⁵ This is a central hypothesis to be tested by this pilot program. Data is needed to test this hypothesis and to illuminate the questions presented.

The experience of state energy programs operating loan programs for energy efficiency suggests the hypothesis is correct, and it is instructive. The data is difficult to capture and analyze, in part because so many state programs implemented programs without employing energy raters and produced data that does not permit reliable *ex ante* analysis on how much cost savings were to be expected.

Actual loan data on a substantial number of loans is essential in order to address the questions that currently prevent the needed corrections to credit policy, and the PowerSaver program is positioned to deliver relevant data.

E. HUD's leadership role

Today, the mortgage finance market is highly ordered around the conventional loan products of the government mortgage programs. Few lenders or secondary market entities other than Fannie Mae, Freddie Mac, and FHA are in a position to innovate or lead.⁶ In undertaking this program, HUD is taking real steps to innovate and create new opportunities for homeowners and the mortgage industry by accounting for energy savings.

⁵ Another reason these loans may perform better is that a homeowner in a more efficient house is able to reduce utility costs without making the house unlivable. Efficient homes are comfortable at lower temperatures in winter, so greater reductions are possible. If a homeowner has a cash-flow crisis, the homeowner can reduce utility bills and maintain a reasonably livable house until the crisis has been weathered.

⁶ Regrettably, rather than leading in the area of energy efficiency, the Federal Housing Finance Agency has chosen to block efforts by states and municipalities to proceed with Property Assessed Clean Energy (PACE) efficiency financing programs, a decision that NRDC has challenged in court.

F. The PowerSaver proposal

HUD described the purpose of the pilot in the program announcement:

“FHA's goals for the Pilot Program are: (1) To facilitate the testing and scaling of a mainstream mortgage product for home energy retrofit loans that includes liquidity options for lenders, resulting in more affordable and widely available loans than are currently available for home energy retrofits; and (2) to establish a robust set of data on home energy improvements and their impact—on energy savings, borrower income, property value, and other metrics—for the purpose of driving development and expansion of mainstream mortgage products to support home energy retrofits.”

The underlying rationale is that loans to fund improvements that produce energy savings present a different and better credit profile than generic home improvement loans. This is because lower utility bills resulting from the improvements gives the borrower additional ability to pay the new loan obligation.

The PowerSaver guidelines resemble the guidelines for traditional home improvement loans in many ways – both use debt-to-income ratio, credit score, and loan-to-value metrics to determine eligibility. The primary difference is that HUD proposes to limit the use of loan proceeds to “eligible measures.”⁷

The eligible measures all generally relate to energy savings, energy efficiency, or in a few cases renewable energy production. We understand that HUD expects that limiting the use of loan proceeds to the list of eligible measures will mean that PowerSaver borrowers are likely to reduce their energy costs as a result of the funded improvements. We understand that HUD expects to engage in a measurement and verification effort during the pilot assessment phase that will seek to identify actual metered energy usage for the borrowers, such as by manually obtaining and reviewing utility records or energy bills.

Section III. Expanded Discussion of Comment #1: *Instead of limiting permitted improvements to pre-defined list of eligible measures, HUD should permit borrowers to fund only improvements that are determined to be cost-effective by a home energy rater.*

A. Key problem: eligible measures will not necessarily produce energy savings

Houses are complex systems, and implementing any of the eligible measures in many cases will not lead to energy savings. First, many homeowners will undertake multiple measures in concert, including finishing out new space and adding features that change (usually increase) consumption patterns, such as new appliances. We believe a common fact pattern will be a homeowner considering upgrading a kitchen who opts to install additional energy efficiency features. The homeowner might fund certain portions of the project from cash reserves and obtain a PowerSaver loan to fund the cost of features meeting the PowerSaver guidelines. Second, homeowners might undertake an eligible measure primarily for reasons other than energy efficiency, such as installing an efficient air

⁷ 75 Fed. Reg., at 69119 (Section titled “Appendix B”).

conditioner in newly added space. Third, many homeowners may not be aware of simple problems that will undermine the intended efficiency goals, such as installing oversized air conditioner because of a poorly insulated house or leaking ducts.

Whether an eligible measure produces meaningful energy savings will depend on many factors specific to the house. And, if it does, it will be by margins that will vary from house to house and from state to state depending on many factors, such as pre-existing conditions of the house, and how well the measure is executed.

Loans to fund projects that meet the proposed eligible measures list will produce wide ranges of energy costs and savings for borrowers. This will greatly inhibit HUD's ability to make sense out of the resulting loan data.

B. A post hoc examination of energy bills will not produce the needed data

We understand HUD may be relying on its ability to collect actual energy meter or billing data to unravel which improvements led to energy savings. Attempting to collect metered usage data or billing information may help with the before/after comparisons and should be pursued as part of the M&V effort. It will not, however, serve as the basis to distinguish between energy savings loans and generic home improvement loans, or to address the goals FHA has set forth – specifically, whether the pilot supports implementing a scalable loan program. On its own, this data would leave many questions unaddressed.

Energy consumption can be reduced for many reasons, some of which are unrelated to the house improvements. Measurements of energy savings may or may not offer any predictive ability concerning loan performance. Large energy savings on the meter may be due to deep efficiency gains, which will tend to improve loan performance; but they also may indicate the occupants' need to cut back on energy due to economic distress, which predicts the reverse outcome. Large energy savings in a given year may or may not be predictive of similar savings in other years.

If HUD is considering use of this kind of information at any scale, we suggest HUD explore the plan in detail with several utility companies in different geographic regions to understand their requirements for sharing usage or billing information, including confidentiality waiver, the form in which the information will be shared (i.e., paper print outs), the ability to match billing cycles to the improvement dates, how to address situations where there is a prior occupant during the period needed to establish a monthly average, controlling for seasonality and weather differences, the period needed to do reasonably reliable monthly averages, determining the past variability for the house and occupant. and other such questions.

C. Energy savings must be treated as part of the credit policy

As described above, the rationale for this pilot is centered on the idea that homeowners making efficiency improvements will have a different and better credit profile than generic home improvement borrowers because reduced utility bills will mean additional household income. This energy cost savings can be measured and defined, enabling FHA to define credit policy metrics for energy savings just as they do for other eligibility factors.

We suggest the right starting point for purposes of the pilot is a cost-effectiveness test. At a later date, FHA might opt to adjust this metric.

As noted above, we use “cost effective” to mean that the expected dollar amount of energy savings from a given improvement measure is greater than the expected monthly payment on a loan to fund the cost of that improvement. If assumed loan terms are used for the calculation, FHA could implement a cost-effectiveness test to meet its own credit policy standards.

D. Reliability of energy cost and savings models

Experienced mortgage professionals commonly react to the concepts described above with unease due to unfamiliarity with the reliability of predicting energy costs/savings. The reaction frequently goes something like this: How could a lender base a credit policy decision on a homeowner’s expected energy costs or savings when actual monthly utility bills depend on behavior, the number of kids, the number of televisions in the house, and so many other usage factors?

This concern can be fully addressed, and models for predicting energy costs and savings operate in similar fashion as other modeled elements used in credit policy and traditional loan underwriting.⁸

It is important to recognize that sound credit policy today includes several “modeled” factors and factors that are expected to change during the loan term. Most obviously, the ubiquitous credit score is a model. A high credit score is not expected to correctly predict every individual’s behavior. People with low credit scores never miss a payment, and people with high credit scores will have early-payment default. Rather, the credit score informs likely behavior, and over a large number of loans the distribution is expected to be regular.

Credit score models are periodically re-tuned and validated based on a continual feedback loop using actual loan results, new variables, and new consumer behavior.⁹ This increase in accuracy over time is a function and product of lenders’ use of the models, not a pre-condition.

The asset value used in all conventional mortgage underwriting is a modeled number. The actual sales price of a house may vary significantly from the appraised value. Some homes will sell for less than appraised value, some will sell for more. It is reasonable for credit

⁸ In light of what happened to mortgage lenders, insurers, and investors in the years 2007 to present, it would be reasonable to ask whether “traditional mortgage underwriting” could, in fact, have flaws in need of correction. Our assessment suggests the flaws relate to lenders assessing too little accurate information about the loan applicant’s household budget, not too much. Today, the “traditional” approach to loan underwriting still includes no attempt to assess the homeowner’s energy costs, even in a refinance situation where the information is available.

⁹ See [New FICO Model Changes Approaches to Consumer Credit](#), Partners in Economic Development, published by Federal Reserve Bank of Atlanta, Vol. 18, No. 2 (2008). For example, as consumers began to use multi-lender web-based services to shop for loans, credit scoring models were revised to reflect the fact that number of credit inquiries was not necessarily an indicator of credit distress. This was tested and empirically confirmed over time using loan inquiry information and subsequent loan performance information.

policy to rely on appraised value because of the regular distribution of variation across a pool of loans. Lenders (and loan insurers) also employ automated valuation models which use tax records and other data – none of it exactly “accurate” per se – to triangulate to a reasonable estimate for the house value. Again, these models are constantly re-tuned based on results.

Tools to predict energy costs and estimate energy savings are similarly accurate, as demanded by the loan process, and considerably more accurate than the models in use by lenders, loan investors, and loan insurers today.¹⁰

Modeling energy costs (or energy savings resulting from house improvements) for the loan does not require an exact prediction of each borrower’s actual monthly utility bills. Rather, the energy costs model should, over a pool of loans, provide a prediction that is accurate at the mean and has a regular distribution of variation.

A useful model of customer-specific energy costs can be based upon factors already included in the loan process – the square footage of the house, zip code to reference average utility rates, and existing data sources provide average energy use per square foot. In a refinance situation or home improvement loan, the consumer’s prior, actual energy bills are available, providing an additional data point for modeling expected future usage.¹¹

E. A home energy rating identifies cost-effective improvements

Home energy ratings have for many years been used to identify the range of improvements a homeowner should consider through the use of diagnostic tests such as blower door tests to find leaks and pressurizing the air conditioner ducts. Home energy raters use technology, software, and tools that incorporate data collection about the house, the occupant, and the needed measures.

A primary output from the home energy rater’s tools is a rank-ordered list of measures based on cost effectiveness. This data will enable the homeowner to make a rational decision about which measures are likely to pay for themselves – that is, the energy savings expected from the chosen package of measures exceeds the expected payment on a loan to fund the cost of installing the measure.

There are multiple providers of home energy ratings, certification regimes, various software tools, and options for the form and format of presenting the results to the consumer. These software tools can easily accommodate FHA guidelines on cost of financing assumptions to use for the modeling of cost-effectiveness. The output from the home energy rater can be tuned to match the credit policy needs of FHA.

As describe further below, we believe the reliability of the energy rating is considerably beyond what is needed for the underwriting process.

¹⁰ RESNET, for example, reports that it requires ratings to be redone by a third-party to check accuracy in a percentage of instances. An allowable error is reported to be 3 HERS points.

¹¹ In a new home purchase, many new homes have energy ratings that are statistically derived and validated.

F. Additional benefits of employing a home energy rating in the pilot program

A home energy rating not only delivers essential information for credit policy decisions, but also offers additional features that have significant value:

- i) We expect the home energy rater would make a second visit to the house after the work is complete to verify the correct installation of the measures and that they are performing as modeled. This will provide an additional measure of risk mitigation against contractor error and fraud. Good-faith error is a real concern because many of the eligible measures require specialized technical knowledge for them to work right and save energy.
- ii) Some homes are likely to have pre-existing health and safety problems that will not be identified and corrected without an audit. In some cases, an energy retrofit without an examination of air quality or moisture transport issues will lead to the exacerbation of these pre-existing problems. For example, adding insulation without attention to moisture in a very cold or very humid climate could exacerbate mold; sealing leaks in a house with unaddressed sources of radon can worsen occupants' exposures; and, leaving ducts in a leaky condition while changing other aspects of the house can cause the transfer of toxic fumes from garages to the house. An audit will help to detect and prevent these and other similar problems.
- iii) If cost-effective improvements improve the market value of a house greater than the loan amount, this should deliver a direct benefit to the holder of the senior mortgage obligations on the home, which is more likely than not to be Fannie Mae, Freddie Mac, and FHA (or GNMA), by lowering the LTV, which in turn reduces risk of default.

G. What kind of home energy rating should be used?

To qualify for use in PowerSaver, a home energy rating regime should deliver to the lender and FHA whether the proposed measures would satisfy an FHA defined model for cost effectiveness. This is a binary yes/no result. We recommend a home energy rating system should at least meet the following conditions:

- i) Produces a cost-effectiveness test for proposed measures.
- ii) Uses a methodology for determining cost effectiveness that is reliable, empirically derived, and statistically sound.
- iii) Uses a quality assurance regime that tests whether two different raters will produce the same results for the same home.
- iv) Can accommodate a quality control regime for the lender or FHA to verify the rater is in fact certified.

To implement this important concept, HUD could request implementing jurisdictions to designate acceptable home energy ratings providers that produce a HERS rating or the

equivalent.¹² HUD might also request that DOE make a recommendation on home energy rating tools that meet the standard required.

Today, we are aware that the Home Energy Rating System (HERS) approach, overseen by RESNET, for example, provides cost-effectiveness results. We believe HUD or Department of Energy analysis could determine whether this and other methods would satisfy the credit policy conditions we have outlined above. Any methods that deliver satisfactory results should be permitted for use in this pilot.

H. Expected cost of home energy rating

A complete energy rating for a new home, producing not only a house score but also expected utility bills, is typically a \$400 to \$500 expense. The cost of ratings for existing homes is expected to be less. We believe the cost of a rating for home improvement could be lowered further by tuning the methodology to the needs of the credit policy, such as not doing a reference home. There is also potential to integrate rating systems with other data sources, including other data obtained in the loan process, to avoid certain manual measurements. These and other innovations that will reduce the cost of the audit may be discovered only as a result of the use of the audit in production.

We understand certain contractors provide energy ratings from certified raters as part of their overall value proposition. We also understand that many state energy programs and utility efficiency programs currently subsidize the cost of an energy rating for homeowners.

I. Opting against home energy rating simply results in delay

Assuming for discussion purposes that HUD is able to use the pilot results and information gathered through homeowner billing data to support the implementation of a final, non-pilot program, credit policy will require a method of predicting the energy bill reduction. Knowing that House A, which had certain improvements, had energy bills that were \$100 a month lower than before the improvements, will not help a lender, investor, or insurer to make credit policy decisions for a future loan program. The \$100 in recorded savings must be compared to a predicted savings of, say \$97 -- a number that is available at the time of loan origination, that is produced using a standard methodology, that leads to reproducible results, and may be continually fine tuned with results of loan data.

To differentiate between energy savings loans and generic home improvement loans requires tool enabling a lender to identify at loan origination which combination of borrower, house, and proposed improvements were likely to lead to actual energy savings with a reasonable level of reliability. This is exactly what an energy rating is, and it exists today. To implement any permanent program, HUD/FHA would be required to re-create the function of an energy rating and test it.

¹² HUD should also consider requirements such as ability to update assumed loan terms for the cost-effectiveness test, data retention policies, and data integration capabilities.

J. Audits performed by the home improvement contractor

We note that some firms are emerging that provide both home improvement work and energy ratings by certified raters. We recognize this combination is not ideal for the loan context -- it sacrifices some of the quality control benefits that a third-party rater would provide. At the same time, it offers certain advantages, notably in convenience and costs.

We suggest, for purposes of this pilot that the required home energy rating need not be a third-party independent of the contractor. This will require spot checks on quality and honesty of the ratings, with serious consequences for any contractor or rater if consistent errors are found. This feature should be re-assessed in the event the program is expanded to a full, non-pilot phase.

K. Alternatives

In the event that HUD opts against using a cost-effectiveness test for eligible measures, HUD should consider the following alternatives:

- i) Collect the necessary data points to enable a post-hoc determination of the energy savings attributable to the funded improvements. Require an inspection by trained energy auditor on a very large sample of homes immediately post improvement work.
- ii) Implement the pilot only in jurisdictions where other programs (such as a State Energy Program or Utility Efficiency Program) along with the approved lenders, will require and fund the cost of a home energy audit to be eligible for an incentive.
- iii) Substantially reduce the list of eligible measures permissible without a rating. All other measures may be undertaken only if verified as cost-effective with an energy rating.

L. Sample Work Flow

Use Case 1:

- i) Homeowner gets a qualifying home energy rating to identify potential repairs.
- ii) Homeowners gets a contractor's bid on the project.
- iii) Energy rater issues report with an estimate of energy savings to be achieved by efficiency measures selected.
- iv) Homeowner submits loan application to lender with energy rater's certification of cost-effectiveness.
- v) Consummate loan to fund those improvements included in rating.
- vi) Energy rater does a post-work site-visit to confirm work installed properly.
- vii) Loan proceeds released to contractor.

Use Case 2:

- i) Homeowner engages with contractor on an upgrade or renovation project, and contractor or homeowner suggests additional efficiency measures.
- ii) Homeowner obtains energy rating to estimate energy savings to be achieved by efficiency measures selected.
- iii) Homeowner submits loan application. (Same as above forward)

Section III. Detailed Comments on Eligible Measures

HUD proposes a list of eligible measures that a PowerSaver loan may be used to fund. (75 Fed. Reg. at 69119). As discussed previously in these comments, NRDC urges HUD to require a home energy rating to identify cost-effective measures that homeowners can choose to implement. NRDC recommends that any measures identified as cost-effective by the certified energy rater be eligible measures for a PowerSaver loan, thereby making the eligible measures list unneeded. Alternatively, HUD may opt to make approval by the home energy rater a necessary condition to proceeding with any of the measures included in the eligible measures list.

NRDC urges that if HUD chooses not to require a home energy rating, as we suggest in these comments, that HUD should exclude measures that have a substantial likelihood of not being cost-effective for most homeowners.

NRDC provides the following recommendations and comments for the eligible measures listed in Appendix B.

Whole House: HUD proposes to include whole house air sealing measures, but does not describe how leaks are to be found or the standard for sealing. We suggest HUD include two elements: (a) To be eligible, air sealing measures must occur after leaks identified using a duct blaster for all ducts and a blower door test for the envelope. And, (b) the house must pass a pressure test following the sealing work to confirm leaks are sealed.

In the event HUD cites a Building Performance Institute, Inc. (BPI) standard for contractor methods, the reference should be to a specific standard, such as *BPI-101: Home Energy Auditing (EA) Standard*,

Insulation: Attic (B): NRDC generally agrees with the proposed prescriptive requirements for attic insulation. NRDC recommends that HUD also specify that is the given R values are for continuous insulation and not framed. Framed insulation should be required to achieve the same equivalent R value (which would require the installation of higher R value insulation).

Insulation: Wall: Proposed text seems to permit cavity insulation or continuous. Framed cavity insulation will not achieve the same R value as continuous. If using "blown insulation" we recommend a post installation test to confirm effectiveness. Also blown in insulation can create moisture problems that could result in mold or

structural damage in some climate or individual conditions. A home energy rater would test for appropriateness of this measure.

Duct Sealing: HUD should specify the insulation level and pressure test level for the complete supply and return ductwork when in unconditioned space. When ductwork is replaced or sealed, the threshold of 50% of the system will not produce meaningful energy savings if the portion replaced was not the portion that leaks. A performance approach with a pressure test will eliminate the need to prescribe products of a percentage complete.

In the event HUD cites a BPI standard for contractor methods, the reference should be to a specific standard.

Skylights: We recommend that U values for newly installed skylights should be substantially lower than current EnergyStar levels and recommend a $U < 0.3$. We note this prescriptive measure would be unneeded if the cost-effectiveness test is adopted, which allows the energy rater to assess and balance the impact of the skylight on cooling, heating, and lighting systems.

We recommend that HUD add a new eligible measure for replacement windows. The choice of storm windows or replacement windows should be based on which delivers the greatest energy savings and is cost-effective given the other features of the house. HUD should allow replacement windows to qualify as an eligible measure if they meet the criteria specified in DOE's High-Insulating (R-5) Volume Purchasing Program, with the added criteria of an SHGC of 0.22 or below for windows installed in the South and South Central regions as defined by Energy Star.

Storm Windows: Storm windows do appear to help reduce air leakage, as described in some Home Energy articles, but are poor substitutes for new windows and should only be used where cost or landmark/historic status, prohibits replacing the existing windows. As stated above, an energy rater comparing the effectiveness of each measure is the best way to determine which is appropriate.

We also note considerable uncertainty about the value of the current "low-e storm window volume purchasing program, which has no U value requirements. For cold climates the Low-e coating should be located to reflect radiant heat back into the room. In warmer climates the coating should be placed to deflect unwanted solar heat gains. The storm window has the low-e coating on it, then it would need to be placed on the inboard of the existing exterior window to help reduce heating bills and outside in cooling-dominated climates. The knowledge of how well the low-e coatings perform over time when placed on a single pane is unknown—generally low-e coatings are placed on the inside of double pane windows and are protected from scratching.

Air Conditioner (HVAC): HUD proposes to include heating and cooling systems that meet the current Energy Star criteria as an eligible measure. NRDC suggests that HUD modify these criteria to be the highest tiers set by the Consortium for Energy Efficiency as currently in effect (http://www.cee1.org/resid/rs-ac/res-ac_specs.pdf). The use of the CEE tiers would provide greater energy savings to consumers and align PowerSaver

with the specifications for the Section 25C homeowner tax credit for nonbusiness energy property. Modifying the criteria to the highest CEE tiers will also help ensure that homeowners do not miss the opportunity for cost-effective savings.

Geothermal: We suggest renaming to “ground source” heating systems.

Fuel Cells: We strongly suggest fuel cells be removed or permitted only with recommendation of a certified home energy rater validating the cost effectiveness of the measure.

Solar Panels: We recommend permitting solar panels only upon a showing from energy rater that the measure is cost-effective. We suggest HUD examine closely the models used to determine cost-effectiveness,

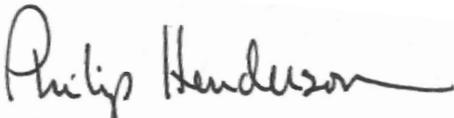
Wind Turbine: We recommend permitting financing of wind turbines only upon a showing from energy rater that the measure is cost-effective. It appears the eligibility limit of 100Kw would permit very large installations. We recommend establishing an eligibility target using annual production of the facility relative to the energy use of the property. We suggest HUD examine closely the models used to determine cost-effectiveness,

Section IV. Conclusion

We appreciate HUD’s work to create and implement this important program. We strongly suggest HUD include measures in the pilot to more carefully direct PowerSaver loans to borrowers making home improvements that are expected to produce energy savings and to measure the expected savings. With those features the program would be more likely to produce the benefits envisioned and validate HUD’s innovative approach.

We look forward to assisting HUD in developing final regulations and making this program a success. Please do not hesitate to contact me for questions or further information at 202-289-2383 (phenderson@nrdc.org) or Meg Waltner at 202-513-6270(mwaltner@nrdc.org).

Respectfully Submitted,



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